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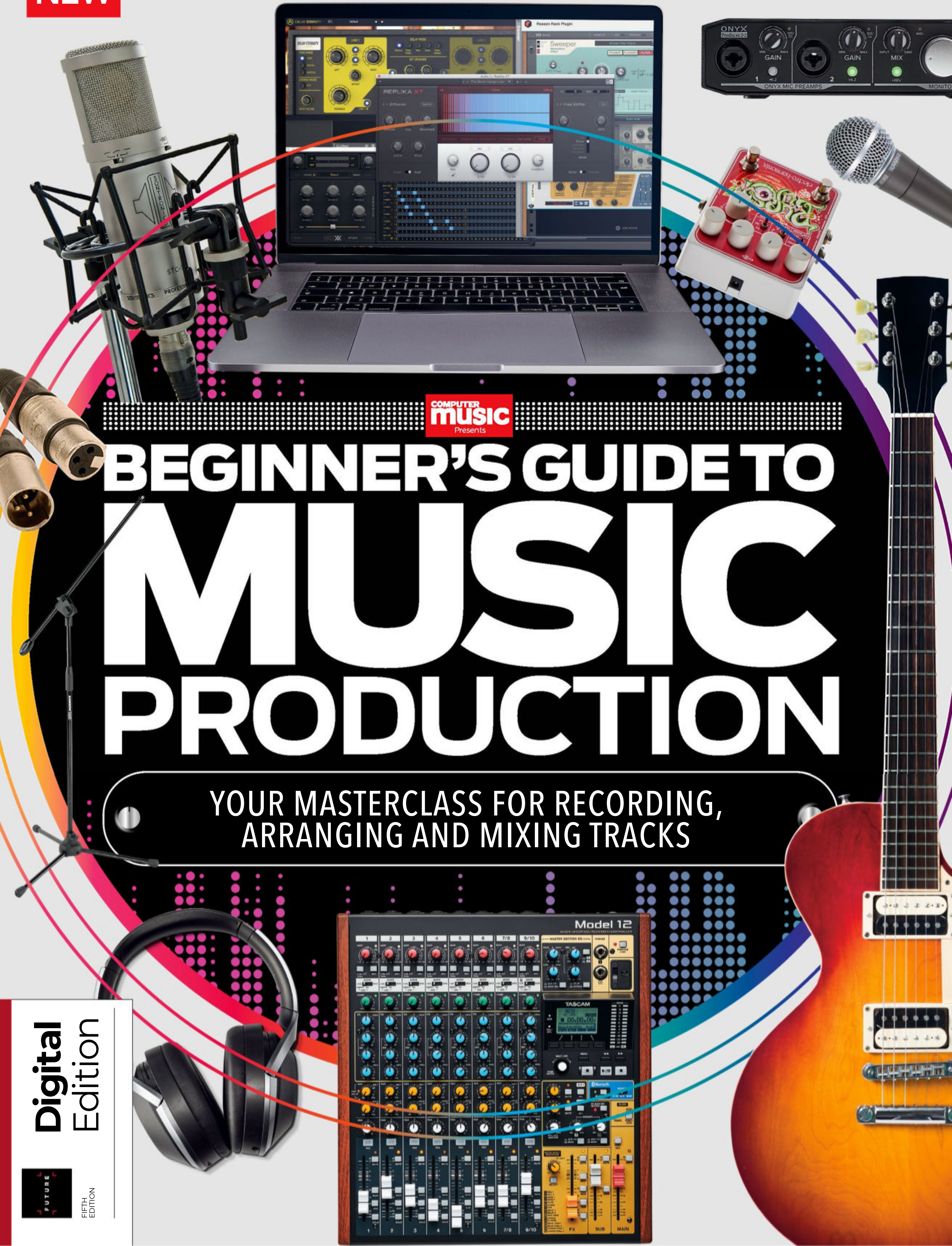
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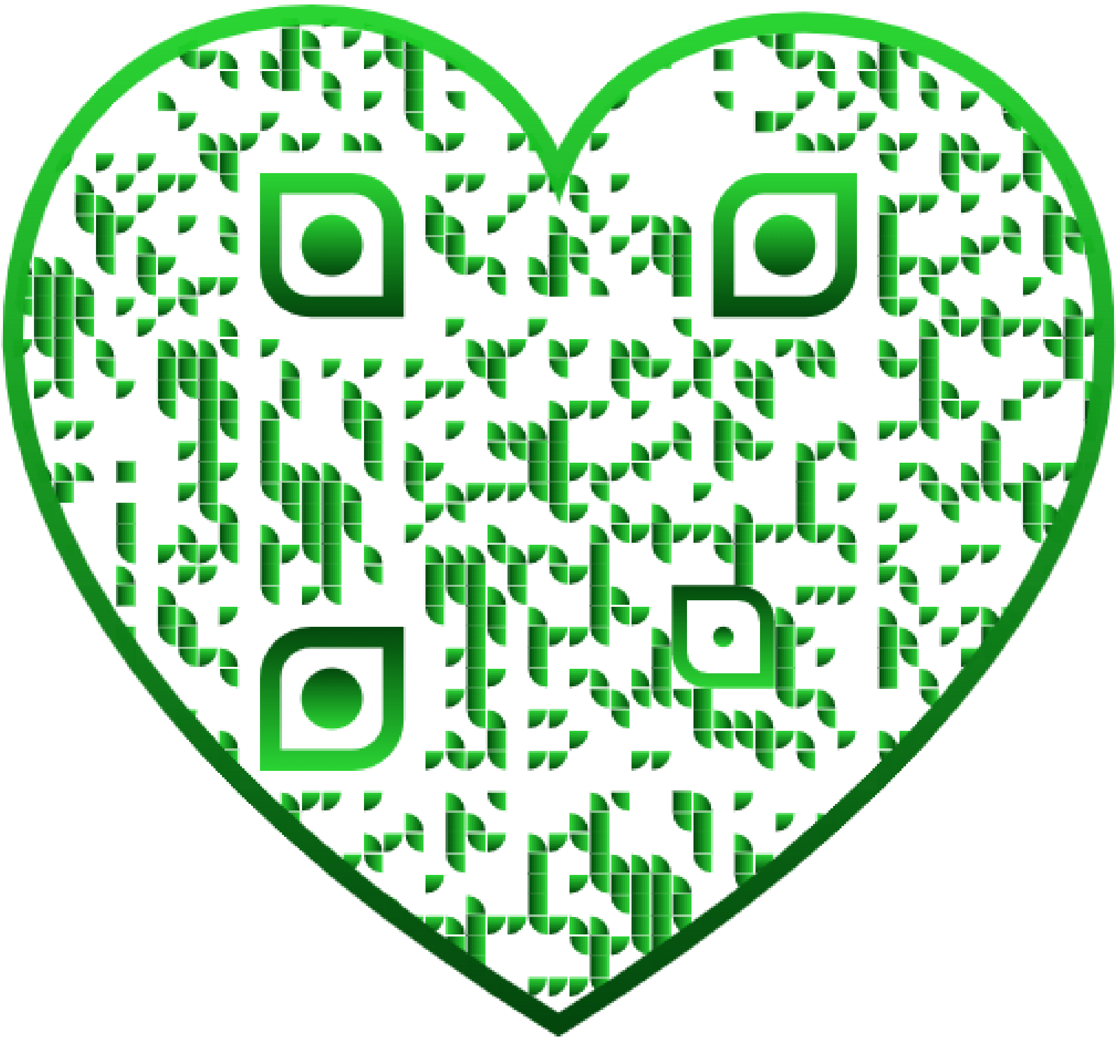
BEGINNER'S GUIDE TO MUSIC PRODUCTION

YOUR MASTERCLASS FOR RECORDING, ARRANGING AND MIXING TRACKS

Digital Edition

FUTURE

FIFTH EDITION



BEGINNER'S GUIDE TO MUSIC PRODUCTION

YOUR MASTERCLASS FOR RECORDING, ARRANGING AND MIXING TRACKS

If you are looking to get started in music production but aren't sure where to begin, you've come to the right place. This book is filled with expert advice and helpful tips to help you on your music making journey. We'll have you creating your own tracks in no time; over the following pages you'll learn how to record and arrange tracks like a pro, and we'll also teach you some tricks for producing different genres like EDM, hip-hop, new country and more.

This book also comes with exclusive access to all the software, plugins and tutorial videos you need for a truly interactive learning experience. Simply follow our guide on page 15 to download and install the Computer Music Plugin Suite.

We hope you enjoy your first steps into the world of music production with this book. So let's get started...

FUTURE

BEGINNER'S GUIDE TO MUSIC PRODUCTION

YOUR MASTERCLASS FOR RECORDING, ARRANGING AND MIXING TRACKS

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iLoud

Start here!

Your music making journey starts here! We guide you through the tech terms and the gear and software you'll need – much of which comes free with this issue – and reveal the best buys in a variety of must-have and optional extras to take your music productions up a level!

If you want to start making music you have come to the right place, and the best news of all is that you have all the advice you need in this guide and probably 90% of the gear you need too! That's because a humble computer – a PC or Mac – can deliver most of the power and processing you need to make music. All you need to do is add some software – much of it free, and most of it bundled with this guide. Just add a pair of headphones or speakers and you will be able to hear the results of your music production endeavours!

However, this guide is also designed to take you one step further, to turn what could be a first dabble in music making into a full-blown hobby, or even – dare we say it – a career in music production. With that in mind we are using this very feature to introduce you, not only to the terms and software you need to get going, but also to some of the choice pieces of gear you will need to take your productions up to the next level. But don't worry, you needn't spend the extra cash if you don't want to. All of the many tutorials in this bookazine are designed around using the software we supply at filesilo.co.uk (see p15 for a full guide) and just a basic Mac or PC. So let's show you the basics and then look at some of the options you can take once the music making bug has bitten.

The basics

Music production used to be a complex process involving the recording of real instruments onto tape and then mixing the different parts to make songs. Expensive recording studios and 'proper' musicians were required. Nowadays the power of a relatively basic, off-the-shelf Mac or PC can cover most of your recording and mixing needs, as long as you have a relatively common piece of software running on them, to bring the whole process together. This first and most important application is the **DAW (Digital Audio Workstation)**, once known as the 'sequencer'.

A DAW allows you to arrange notes and different song parts (or **tracks**) together, simply by dragging them around on screen with your mouse. Generally speaking, most DAWs present the song to you on screen moving from left to right, as the song plays, with tracks showing vocals, drums, keyboards and so on, from top to bottom.

Songs or tracks can be made up of two main types of information: **MIDI or audio**. MIDI information (or Musical Instrument Digital Interface) comprises the actual notes you play or record. Typically you record notes into your computer using a **MIDI keyboard** (more on these later), and the notes then appear on a DAW track, and you can then edit them on screen by dragging them around with a mouse. You can change their volume (**velocity**) and **duration** (by dragging their note length) plus a lot more besides. The benefits are simple: you don't need to be able to play in time or in tune, because all recorded notes can then be edited and saved later.

Your DAW will usually have several **plugin instruments** bundled with it which are triggered by MIDI. They might be, for example, piano, drum or guitar instruments, so you can play or record piano, drum or guitar sounds to make up a piece of music, and, again, edit the notes later. DAWs also have a great feature called **quantisation** which allows you to very quickly put your recorded notes in time with the tempo (speed) and time signature of the song. Record some notes in badly, hit quantize and, hey presto, they are in time!

You don't need to be able to play!

So, already, the first advantages of using a DAW are clear: you don't need expensive real instruments – grand pianos, acoustic guitars, hardware synthesizers or classical instruments – to be able to put songs together. And, more importantly, you don't need to be able to play them, bar triggering them via your computer keyboard, or that MIDI keyboard. As great as it is to witness a trained musician in full flow, computer music production allows us all to be able to put pieces of music together, no matter what our levels of musical knowledge and playing skills.

However, if you happen to know some great musicians, or have access to audio samples of great playing, then it's time to touch on the second type of track that a DAW uses to make up a song. The MIDI track records the actual notes that trigger different nouns, but the second type is the **audio track**. Here you might set up your computer to record actual singing or guitar or piano playing using a **microphone** (see the main feature on this on p46). The sound recorded in will be in **digital audio** format, a sound file if you like, and will be recorded onto an audio track.

Audio sound files to mix into your music tracks can also be found in **sample collections** – that is professionally-created audio recordings of drum loops, guitar playing, singing, anything in fact – that you can download from companies including Loopmasters, Sample Market, ModeAudio and many more. You might, for example, be interested in producing dance music. These companies have produced literally thousands of dance music sample collections covering just about every music genre and dance music sub genre. You'll be able to audition the sounds within collections on the company websites and then download each sample, or entire collection… for a cost. You can then add single hit samples to your song – that is sound effects, vocals, guitar stabs and so on – or entire sampled loops where you can, for example, loop complete drum tracks together, to quickly and easily create a tune track by track.

Audio and MIDI tracks are typically shown slightly different in a DAW: the MIDI tracks as notes, the audio tracks as digital waveforms, but otherwise both can be treated in the same way in a DAW. You can, for example, cut up each track – audio and MIDI – into different segments, move them around on screen, copy and paste them into new locations and a lot more. And this is another big advantage of using a DAW: copying and pasting these audio and MIDI parts allows you to quickly create an entire song, usually from left to right. You won't need to play a repetitive drum or bass tracks all the way through a five-minute song. Simply take four or eight bars and repeat the loop for the entire song duration. Easy!

Track by track

So now we know that a DAW has two types of track – audio and MIDI – and really takes the strain out of music making by allowing you to arrange and mix these tracks. We have touched upon the plugin instruments that you can have on each MIDI track, and the audio you can either record or drag in from sample collections on the audio tracks. We will look in more detail at the different types of plugin instruments and DAWs later, but for now we just need to touch upon one more category for your initial music making enjoyment: **the plugin effect**.

These are used to make your music more interesting and your sound more professional. You might use a **reverb or echo** effect to make a vocal recording sound less 'dry' for example, like it was recorded in a special room, with all of the character of that room imparted on the sound. Other effects include **delays** to repeat a sound, **chorus** to thicken a sound, **EQs** to increase or decrease treble or bass or **distortions** to give a sound like a guitar a rockier edge.

Plugin effects are usually also split into audio or MIDI varieties, with MIDI effects applicable to MID tracks and audio effects able to be added to both audio and MIDI tracks. We'll explain more and how to add them along with buyers guides over the page.

Those are the very basics of music production, then. Armed with decent DAW and some plugin instruments and effects, you can start your music making journey right now. But while the **cm Plugin Suite** (p15) has everything you need to get going, let's also take look at the different essential categories in more detail and some of the many other options available.

A note on automation

Automation is an option available in most DAWs that lets you record changes on software instruments, effects or the DAW's own mixer channels. You can, for example, record a mixer fader on a particular song track, fading up or down so the volume of a drum loop, for instance, can be faded in to or out of a song. Similarly, you could record changes of the Wet/dry mix dial on a reverb so that its spatial effect gradually increases or decreases as a song progresses.

Automation allows you to make these changes one step at a time. The best bit is that you can then edit the results, so if your volume change seems to happen too quickly, for example, just decrease the volume slope to make it more subtle. Automation is a great way to tweak a mix to perfection, and is well worth understanding and getting to know in whatever DAW you use.

The Detail

A more in-depth look at the essential main elements in your software studio that will get you making music now!

DAWs (or Digital Audio Workstations) will, generally speaking, all offer you pretty much everything you need to make a professional-sounding pieced of music with your computer. They will, however, vary in the way that they do this. Most, as we have already mentioned, present you with your song, track by track, running left to right, tracks running top to bottom. Some, however, like Ableton Live, also allow you to create tunes with loops or clips; trigger a bunch of them together, decide which go best with one another, and then arrange them together.

Neither method of making music – loop-launching or traditional arrangement – is right or wrong and each has its merits. It is therefore important for you to try out as many different DAWs as possible and, luckily, each one we list usually has a free or entry-level version for you to try. There are also some great **free DAWs** on offer over and above those we list in our 6 Of The Best buyer's guide below. **Tracktion's Waveform Free 2021** (tracktion.com/products/waveform-free) is probably the best and most fully-featured free DAW out there and we strongly advise that you give it a go (and it's available for every platform).However, with this very issue we also have **Bitwig Studio 8-Track**, a free DAW especially for you which is also very full featured (and a cut down of the company's excellent Bitwig Studio DAW) and one we run through in an extensive tutorial from p16. As you'll see, it uses a mix of traditional 'left-right' music production and hands-on performance looping. It also allows you to place both audio and MIDI information on one music track – quite rare in DAW land.

While Tracktion and Bitwig are two fabulous offerings, you should be aware of and possibly auction the entry-level versions of other commercially-available DAWs to get a feel of what is out there, and with that in mind, we have listed six other good ones here. You can find details of how to download and use Bitwig Studio 8-Track for free on p16.

6 Of The Best DAWs

Ableton Live

£69 to £539 **ableton.com**

This Mac and PC DAW is a much-favoured option among the dance community as it allows you to arrange clips and loops with ease, with a host of easy-to-implement effects and instruments bundled with it. It uses a different system than most other DAWs but once you are familiar with it, the workflow becomes intuitive and tunes easy to put together. It is great for inspiring creativity – more so even than transforming pre-determined ideas into songs.

Presonus Studio One

£85 to £344 **presonus.com**

Another cross-platform Mac and PC DAW, Studio One has in recent years challenged the higher end Pro Tools, used by film and TV composers, as it comes packed with some great tools, in-depth editing and plenty of instruments and effects. You get an excellent free version bundled with Presonus hardware – see later – which is an excellent introduction to a DAW winning a lot of fans the world over.

Image Line FL Studio

£64 to £364 **image-line.com**

This former PC DAW now runs on a Mac too so Apple fans can benefit from a DAW with an amazing reputation among a huge community of users. This large base comes from the fact that all users get free upgrades whenever a new version is released, not to mention the software's easy workflow and many instruments and effects.

Apple Logic

£200 **apple.com**

This Mac-only DAW is packed full of content and is keenly priced to undoubtedly help Apple shift their Mac hardware. Nonetheless it is one of the best DAWs out there in terms of quality instruments, features and effects and with its last version included an all-new Live Loops feature to rival Ableton's hands-on performance looping. For Mac users, there's little else out there to rival its clout.

Steinberg Cubase

£85 to £499 **steinberg.net**

A great DAW with a long history in music production, having been first released over 30 years ago. Steinberg's Cubase runs well on both Macs and PCs and comes with a huge selection of instruments, effects and one of the best mixing experiences to bring the whole lot together. In fact, in terms of workflow, you won't find many DAWs out there that match Cubase's slick appeal.

Reason Studios Reason

£20/month subscription or £309
reasonstudios.com

Reason is a Mac and PC DAW that emulates a hardware studio 'rack' with software instruments and effects that you can easily wire together and then sequence more traditionally. It has undergone many changes over recent years, not least the ability to run as a complete instrument in other DAWs. It is still a fantastic option, especially for more electronic-based composers, to get ideas down fast and professionally.

Plugin instruments in more detail

Plugin instruments are just that. Simply choose the type of sound you want to make – whether that's drums, guitar, classical, synths and so on – and there will be a software instrument out there (or several hundred as it goes) that you can 'plug in' to your DAW to make music with. You can, quite literally, buy virtual guitars to strum and rock out with, drum kits to bash, brass instruments to trigger with your keyboard, even violins to emulate. There are bass guitars, saxophones, ukuleles, Japanese flutes, triangles... you name it, you can get an emulation of it in software. You load them in and install them (see later) and then simply drag the instrument on the channel you want to make music on, record and play and you are away. Most are MIDI instruments so you record the notes and edit them later and most sound as good as the real thing. Ok, you don't quite get the articulations you would from a proper player and real instrument, but then neither do you need to have a giant bassoon in your house and someone sufficiently skilled to play it!

We cover a huge range of instruments, from cheap to outrageously expensive in our 6 Of The Best buyers guide, and because synths are such a big and popular part of this category, we've included six great options for those too.

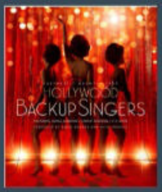
You can also find a great range of instruments (along with many synths) included in the cm **Plugin Suite**, provided for free with this guide, at filesilo.co.uk (Bookazines/Beginners Guide To Music Production). See page 15 for more details on how to get started with the suite.

6 Of The Best Instruments

Auddict PercX Pro

$299 **auddict.com**

Rather than this being a definitive buyers guide, we're really trying to give you a flavour of the different instrument options out there, this being our drumming choice. It is what's called a 'ROMpler', in that it comes with a library of sampled sounds. You get just about everything – huge taikos, booming bass drums, reverberant toms, punchy snare hits and shivery rolls, clattering woods and metalwork, tight congas and bongos – plus a highly flexible interface to mix and mangle them for all your percussive needs.



EastWest Hollywood Backup Singers

$299 **soundsonline.com**

We're including this as an example of a great vocal sample instrument and one that you can use to add a pro sheen to your compositions. You get nearly 600 phrases, vowel sounds and 87 patch instruments which is enough to build up vocals for complex arrangements. East West have a whole range of similar titles and more, and this is one of the best and most recent releases.

Eduardo Tarilonte NADA Meditation Sounds

£179 **bestservice.de**

This is one of the more left-field instruments in our Buyers Guide and perhaps all the better for it. Eduardo Tarilonte is well known in the sound design community for doing more fantastical instruments – his vocal series is really quite special – and this one is designed for more meditative and mindful music production. Forget the stresses and strains of massive baselines, and sit back and relax!

Korg Collection Triton

$249 **korg.com**

This could quite easily have been included in our synth roundup, but actually Triton, the original hardware instrument, was also about recreating real instruments digitally. And this is a software recreation of that hardware – an emulation of an emulation if you like! But whatever, it does it very well and there is a wealth amazing instruments on tap here.

IK Multimedia Sampletank 4 MAX

€600 **Ikmultimedia.com**

One of two 'buy it and you won't need much else' collections in this round up, ST 4 MAX differs from Komplete Ultimate (below) in that it concentrates more on 'real' instruments than a universe of the imaginary. But there's no shortage of synth sounds here; there is plenty of everything – 260GB, with 120,000 samples fuelling over 8000 multisampled instruments – this really is an expansive ROMpler.

Native Instruments Komplete 13 Ultimate Collector's Edition

£1349 **native-instruments.com**

Perhaps the finest collection of instruments (a lot of) money can buy. Yes it's pricey, but it contains everything you need for any piece of music you want to make, and more besides. When you consider what you get – 25 orchestral and cinematic titles, 17 synths, 39 sampled collections and 12 percussion tools, 26 effects, 73 expansions, 115,000 sounds – the price is justified somewhat.

6 Of The Best Synths

Spectrasonics Omnisphere

£339 **spectrasonics.net**

Yes, it is expensive but Omnisphere is one of the most widely-used synths by professional sound designers and composers out there. It has a phenomenal amount of power and a stunning range of preset sounds, plus an engine to twist them into any type imaginable. It costs but is one of the finest soft synths that money can buy.

XFer Records Serum

$189 **xferrecords.com**

If dance music is your thing, then look no further. The biggest dance producers always seem to turn to this (or Massive) for their deep basses and searing leads. It hides a huge amount of power under the bonnet but there are some amazing, off-the-shelf presets to keep you busy for months. The most sonically versatile synth we've ever used, and certainly one of the best-sounding.

KV331 Synthmaster

$99 **kv331audio.com**

This is a multi-award-winning synth where the clue is in the name – it really does master a whole variety of different synthesis techniques, so can produce a huge variety of sounds. Incredibly, though, the interface is relatively simple to understand if you have a basic knowledge of synthesis. If not, just enjoy the many amazing and versatile presets. Quite simply one of the very finest soft synths you can get.

Kilohearts Phase Plant

€169 **kilohearts.com**

This is a modular synthesiser in that you can start from scratch, easily drag component synth parts together and suddenly you have your own synth design. You don't need to know too much about synthesis – although a little knowledge helps – as you can just go in and load up some presets to learn how it all works. Sounds fab too.

Native Instruments Massive X

£179 **native-instruments.com**

The original Massive has become a classic for dance producers and Massive X looks like continuing the trend. Sure there were issues at launch, but many of these have been ironed out and it sounds incredible, with plenty of fantastic UI options to really make synthesizing sounds a joy.

u-he Diva

€179 **u-he.com**

One of the goals of early soft synth developers was to recreate the analogue sound of classic hardware synths. Diva is kind of a 'best of' of that philosophy, taking the greatest parts of many classics and melding them together into a plugin that has become a classic in its own right. In fact it is possibly the greatest 'virtual' analogue soft synth ever produced.

6 Of The Best Effects

BABY AUDIO SPACED OUT

$69 babyaud.io

Spaced Out is a great reverb effect but also has many other tricks up its sleeve in terms of adding movement and atmosphere to your sound. It is both intuitive and creative and you can use it on various levels – basic fun or dig deeper for complex and out-of-this-world action.

KILOHEARTS DYNAMICS

€29 kilohearts.com

This is a dynamic effect plugin that effectively makes the loud parts of your sound quieter and quiet parts louder so really does help even up unruly sequences. It's easy to use, cheap and can even add its own character to your sound, should you wish.

KLEVGRAND MODLEY

$60 klevgrand.se

This is one of the best multi-effect plugins out there, albeit with a central delay engine with lots of added capabilities. You can easily disappear down a creative rabbit hole with the plugin and turn an ordinary sound into something quite extraordinary. For the price, it's unmissable.

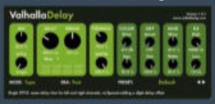
UVI SHADE

€129 uvi.net

Shade is one of those effects that purports to be a workhorse plugin but actually has so many options that it most definitely falls into the creative arena. With filtering and modulation options aplenty, plus 150 great presets, you won't be short or inspiration and you can even use it as a basic EQ should you wish.

VALHALLADSP VALHALLADELAY

$50 valhalladsp.com



Valhalla make some incredible plugin effects that look very simple but are used by some of the biggest names in music production. This delay is incredibly creative, with seven modes that model classic hardware and more adventurous effects. It is incredibly comprehensive and versatile.

WAVESFACTORY ECHO CAT TAPE DELAY

£78 wavesfactory.com

The sound of the tape we used to record with is, you might think bizarrely, one of the most sought after things in contemporary music production. This one homes in on a particular tape effect called the Watkins Copicat. It has a simple interface, over 70 presets and overall delivers a wonderful colour and richness to whatever sound you put through it.

Plugin effects in more detail

There are many different types of plugin effects. They can be **time-based** (delays, reverbs and so on where the effect might be based on the tempo of the song or its time signature); **spectral** (where the effect controls the pan position or EQ); **dynamic** (compressors and distortion effects that offer both subtle and dramatic impact); or **filters** (more extreme EQs).

You can divide all effects (very) broadly into **workhorse mix effects** and **creative effects**. The former include **EQs** which allow you to reduce or increase certain frequencies of a track of music, perhaps the bass in a bassline or the higher treble frequencies in a percussion line. A more extreme version is the filter which can be used more creatively to emphasize certain frequencies and twist sounds into very different shapes.

Panning effects are another example of workhorse effects that allow you to place certain sounds in different parts of the (left-right) stereo field but they can also be used creatively where extreme movement and placement are used. **Multi-effects** combine several different effect so tend to be more creatively used as they might feature delays, filters and more to really shape your sound in new and intriguing ways – and change them well beyond what you started with.

Compressors can be used subtly or dramatically, from being used to keep the volume changes of a bass sound in check to adding character, grit and dynamics to the same bass sound. We have already touched upon **distortion** but these are among the most dramatic effects used, and can add bite and interest to a sound.

We've included a cross section of effects in our 6 Of The Best (left), but do check out the huge range of free effects in the **cm Plugin Suite** (p15).

6 Of The Best Audio Interfaces

AUDIENT EVO 4 £99 evo.audio

Beautifully designed, with a one-dial solution to cover most functions, the Audient Evo 4 is a great option if you are starting out in music production. It is an elegant system which will soon have you recording at correct levels and you also get a decent bundle of software. One of the best value and most logical interfaces around.

FOCUSRITE SCARLETT 4I4 3RD GEN

£200 focusrite.com

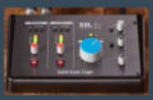
Focusrite's reputation for making great quality interfaces – and a range of other studio hardware – is second to none and their latest Scarlett interfaces cover just about every connectivity option you could wish for, and deliver a fabulous sound for the outlay. The 4i4 here has four ins and outs and, like the rest of the range, includes an 'Air' option which adds a sparkle to higher frequencies, a lift that helps them cut through mixes. It also ships with a very good software bundle.

NATIVE INSTRUMENTS KOMPLETE AUDIO 2

£109 native-instruments.com

Native Instruments started out as a software-only company but now make a range of keyboards and interfaces, the entry points of which offer a huge amount of bang for buck. Komplete Audio 2 might only have a couple of ins and outs but that will be enough for many beginners and the software it ships with is second to none, a lovely introduction to the NI world of wide-ranging sounds and instruments.

SSL 2+ £200 solidstatelogic.com



Many a recording studio has an SSL mixing console, and their sound has become legendary in music production circles. The SSL 2+ brings some of this quality to the home studio owner, and all for a very reasonable outlay. It's a 2-in, 4-out interface with two headphone sockets so different mixes can be monitored. Flexible, great quality and a fantastic price for a bit of sonic history.

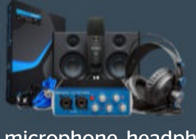
STEINBERG UR22C

£129 steinberg.net

Cubase DAW developers Steinberg certainly know a lot about software and with the UR22C they have teamed up with hardware experts Yamaha to come with a great solution for singer songwriters. Featuring a 2-in, 2-out design it is solidly built and has pristine preamps for a great quality recorded sound. Not surprisingly, you also get a version of Cubase thrown in.

PRESONUS AUDIOBOX STUDIO ULTIMATE USB RECORDING BUNDLE

£245 presonus.com



We'll close with a bundle that covers just about all of your initial recording needs as it includes an interface, microphone, headphones and software. The interface is a perfectly decent 2-in, 2-out affair and the M7 microphone is a good all-purpose option for many tasks. Presonus also make the Studio One DAW so you get a version of that and even some headphones to listen to the results. A fine, entry-level bundle.

Optional extras

Here are some additional options to consider that will help make your music production journey even smoother

Your PC or Mac will likely have a headphone socket and, often, a microphone socket. As good as these are for hobbyists, they might not completely cut it when it comes to music production, so a dedicated audio interface might be required. These offer better preamps for recording; that is they help you get a better quality of recorded (say) acoustic guitar or vocal. They might offer multiple input channels so you can record several instruments at once. They also deliver better outputs so you can connect professional speakers up to hear you music productions in pinpoint detail.

Audio interfaces tend to be plug-n-play: simply connect them up to the USB or Firewire port on your computer and they are good to go. You then simply have to tell your DAW that a new interface is available for it to work with. This will be done in the Preferences menu of your DAW. The audio interface will be listed as an option (along with your regular computer mic input and speaker output options) so simply select the interface, then after a brief setup pause you'll be ready to go. Set your audio interface levels at a minimum before connecting like this to avoid any sudden bursts of sound.

Often the number of recording input options plus the output options will be listed in the interface title so a Focusrite Scarlett 2i2, for example, has two inputs for recording and two outputs to play back on your speakers, while a Scarlett 18i8 has 18 inputs and can play out to multiple sets of speakers. Generally speaking the more ins and outs you want, the more cash you pay. Some interfaces also come with special preamps that deliver a warmer sound for recordings (and cost that bit more) and others also combine to deliver MIDI control (see our MIDI controller section below for more on that).

MIDI controllers in more detail

We've already touched on keyboard-based MIDI controllers in The Basics section. These are actual musical keyboards that don't make a sound! They connect to your computer, usually via the USB socket, and trigger those MIDI plugin instruments, so the actual sound comes from the computer instruments, not the keyboard. The MIDI keyboard sends MIDI data that determines the note played (C, D, E and so on), its duration and volume (and more). You can then edit or quantize these notes in your DAW later.

MIDI controllers aren't just limited to keyboards and notes though. You can also buy controllers with dedicated knobs and sliders that let you, for example, move a DAW channel fader up and down to increase the volume of a song track. Knobs might also allow you to tweak certain parameters on a MIDI instrument, so you are effectively controlling this software instrument via hardware! Some controllers are dedicated to particular DAWs so might have been designed to control the many specific and different features of software like Ableton Live, Steinberg Cubase or Logic Pro X.

MIDI controllers aren't essential – you can, for example, trigger MIDI notes in many DAWs by way of your computer keyboard. However, MIDI controllers do certainly make the playing and recording of notes more intuitive (particularly for those of you who are already familiar with the piano or keys) and the workflow of using many DAWs faster. Ironically they make the whole software experience more tactile and hardware like, so are definitely worth considering if you tire of just using a mouse and computer keyboard.

For our six best MIDI controllers (see our 6 Of The Best, right), we've chosen a decent set of budget offerings plus one or two models better suited to 'proper' players which feature full-sized keys. All MIDI controllers also feature decent software bundles but do check before you buy as these often change per model.

6 Of The Best MIDI Controllers

Roland A-88 MkII

£879 **roland.com**

If you need something properly playable, this is one of the best new keyboard releases. Not only does it feature great, playable keys but a full 88 of them. With MIDI 2 specs, the next-gen connectivity format is present and correct, so it's future-proof too. It is very capable and competitively-priced for those very professional keyboardists and an absolute joy to play if you are a proper keys expert.

Arturia Microlab

£64 **arturia.com**

Not only a great budget offering but one of the most portable keyboards out there. Durable and sturdy, a great all-rounder and even available in different colours!

Novation Launchkey Mk3

From £128 **novationmusic.com**

Novation's Launchkey is aimed fair and square at Ableton Live DAW users but will also control other major sequencers. It's got some fabulous chord and scale playing functions, is very portable and there is a model in the range to suit every price and space.

Native Instruments Komplete Kontrol M32

£99 **native-instruments.com**

Komplete Kontrol gives you unprecedented hardware control over Native Instruments software, of which you get a healthy bundle included. This is one of the cheapest offerings in the range and gives you a great combination of hardware and software.

AKAI Professional MPK Mini MK3

£83 **akaipro.com**

Like most MIDI controllers here, the MPK Mini is USB powered – simply plug in and play. It also features several knobs to control parameters in your software, plus pads to give you an old-school sample and drum triggering experience. A great, budget all-rounder.

M-Audio Oxygen Pro 49

£189 **m-audio.com**

The Oxygen Pro 49 gives you a great balance of playability versus portability. It also features great, playable keys, Smart Chord and Smart Scale technology plus pads, sliders and dials to control all aspects of your software.

Speakers and Headphones

The last big optional extra consideration is a set of decent speakers, or monitors, or, if you don't want to make too much noise, a good set of headphones. But why, if your computer can play back your music, should you need an extra set of speakers? Well, most computer speakers are designed to play back music on a consumer level, that is not professional. You won't for example, get a good stereo spread of sound from most laptop speakers, nor will you get much volume (not that you should be listening to your music at high volumes, we hasten to add). So buying dedicated speakers or headphones for music production is a great idea, especially if you want to hear your music in detail – a key point.

As good as most DAWs are, and most plugin instruments and effects for that matter, they can all be completely undone by a bad mix. That is, you might have way too loud a bassline or kick drum in your mix, simply because you can't hear it cut through your computer speakers. A decent set of monitors or headphones allows you to hear your mix in all of its glory; every detail can shine through. They tend to be more accurate than a computer speaker too. Cheap computer speakers very often enhance the bass artificially, meaning that if you mix on them, you will turn down the bass as you mix. Play your 'mixed' song on another system and it will sound thin and bass right, because you weren't hearing an accurate version of it through your computer speakers in the first place. Proper monitors deliver 'the truth' so you can mix with a certainty that what you hear is what you will get, wherever you play it.

The more accurate a speaker or set of headphones, you've guessed it, the more cash you can shell out, but we have six options to cover most budgets in our buyers guide (6 Of The Best, right).

6 Of The Best Speakers and Headphones

Austrian Audio Hi-X55

£249 **austrian.audio**

Headphones are becoming more popular as the alternative way of mixing music. The obvious benefits are that they don't take up much space and are more neighbour-friendly. The fact that they have come on so much technology-wise over recent years has also helped. These are lovely, comfortable phones with a closed back design that is great for mixing. They are reasonably accurate and great for long listening sessions.

AKG K371

£134 **akg.com**

AKG are one of the biggest and most experienced companies in pro audio and they've packed a lot of knowledge into a very reasonably-priced set of phones here. The K371s deliver a controlled and accurate response across the range, are comfortable enough for long sessions and their closed-back design means less spill for recording vocals and less intrusion while working.

IK Multimedia iLoud Micro

£267 **ikmultimedia.com**

It used to be that small speakers just would not cut it in terms of accuracy for studio mixing, as they would very often have bass enhancements to make up for their small size. These could smash that rule book and deliver both accuracy and power from speakers small enough for any desktop. And don't be put off by the size either; these things are capable of some serious volume.

JBL One Series 104

£129 **soundtech.co.uk**

There's never been a better time to buy decent speakers for silly money, and these are a another set of rule breakers – put simply you shouldn't get this kind of quality from the size or price of these JBLs. We were seriously impressed with the sound reproduction, which was both balanced and accurate across a wide frequency range and they are ideal low-cost solutions for a variety of mix situations.

Kali Audio IN-8

£699 **kaliaudio.com**

Californian newcomers Kali Audio are quickly reinventing the speaker wheel by delivering great quality and accurate monitors at a very good price. You might think that £699 is a lot but in pro monitoring circles that is a small price to pay for the quality and build you get here. Outstanding.

Presonus Eris E7XT

£340 pair **presonus.com**

These are the mid range speakers in Presonus's entry-level range of studio monitors deliver both great accuracy and a wide listening position for the money. Very often you don't get a truly accurate representation of your music at this price point but these are about as good as it gets and a fantastic option for entry-level mixing.

How To Use This Guide

Your step-by-step guide on how to make the most of this book, detailing all the videos, software and tutorial files that accompany each of the features, offering you a completely interactive learning experience!

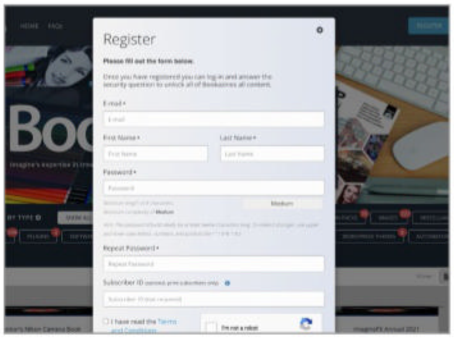
> Each one of the features in this guide is aimed at newcomers to music production, but in order to get the best from them, we have produced sets of accompanying sound files and videos to go with them so you can hear how your music is supposed to progress as you go through each workshop and see what you need to do on video. We have also included the Computer Music Plugin Suite, a set of over 90 instruments and effects that you can download and install for free, many of which you will need in the workshops in this guide.

In order to access all of this additional content, go to filesilo.co.uk to download it – see the Using FileSilo boxout. Once you have logged in, you will be presented with all of this content, feature by feature, as either video files (in the Video Tutorials area) or audio and video files (in the Tutorials Area).

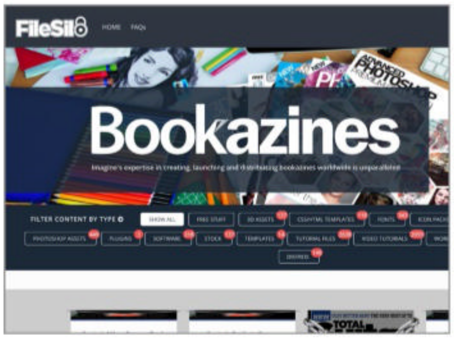
The CM Plugins Suite of instruments and effects is in the Software section and comprises instruments and effects for Mac or PC. Simply download the Instruments and Effects for whichever type of computer you use. More detailed instructions on how to install these instruments and effects, is included in the installation box.

Finally, we also have a complete DAW for you to download and install, in the form of Bitwig Studio 8-Track, which is the software you need to complete the workshop on page 16. You will need a unique code to download and use this, which will be mailed to you after you click on the link in the 'Bitwig Studio 8-Track Instructions' document, in the Software section at filesilo.co.uk. Enjoy!

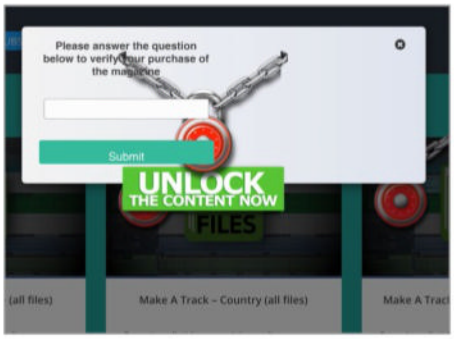
>Step by step Using FileSilo



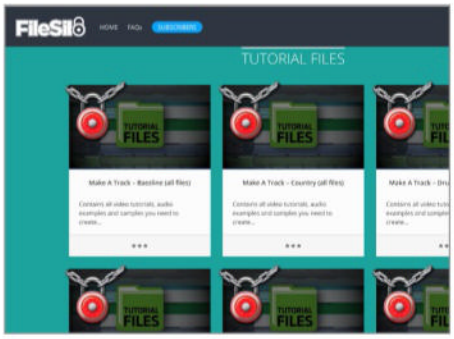
1 > Create an account with your email and custom password at filesilo.co.uk.



2 > Go to the Bookazines tab at the main filesilo.co.uk screen. Click this tab and you will see a list of recent Bookazines we have produced including The Beginners Guide To Music Production. Click on this – it will have the same image as the cover of this bookazine.

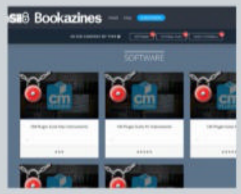

Please answer the question below to verify your purchase of the magazine
Submit
UNLOCK THE CONTENT NOW
Make A Track – Country (all files)

3 > Answer a simple question related to the content of this bookazine and you will be taken to all the feature content. You only need to answer this question once – next time you log in, all of this content will be visible.

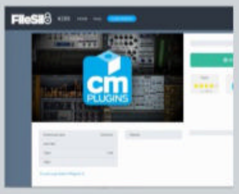

FileSilo
TUTORIAL FILES
Make A Track – Bassline (all files)
Make A Track – Country (all files)

4 > Now simply go to the feature name tab – Make A Track: Country, Make A Track: Drum n Bass and so on – and you will download all of the files associated with that feature. With these Make A Track genre tutorials, the files you download includes all of the associated video and sound. With others – including Arrange Like A Pro and The Easy Guide To Music Theory – you just get videos.

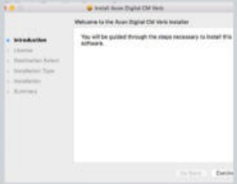
Installing plugins from the CM Plugin Suite



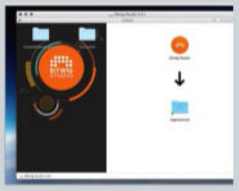
STEP 1
Go to the software section under the Bookazine/ Beginners Guide To Music Production.



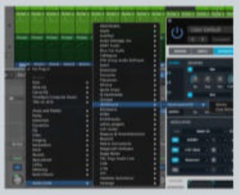
STEP 2
Download the Instruments and Effects for whatever computer you use, Mac or PC.



STEP 3
Double click on the plugin you want to install. Your computer should run through a standard software installation routine.



STEP 4
Now open your DAW – you will need to buy and install any of the major DAWs (see our previous The 6 Best DAWs feature) or simply download and install Bitwig Studio 8-Track (see page 16).

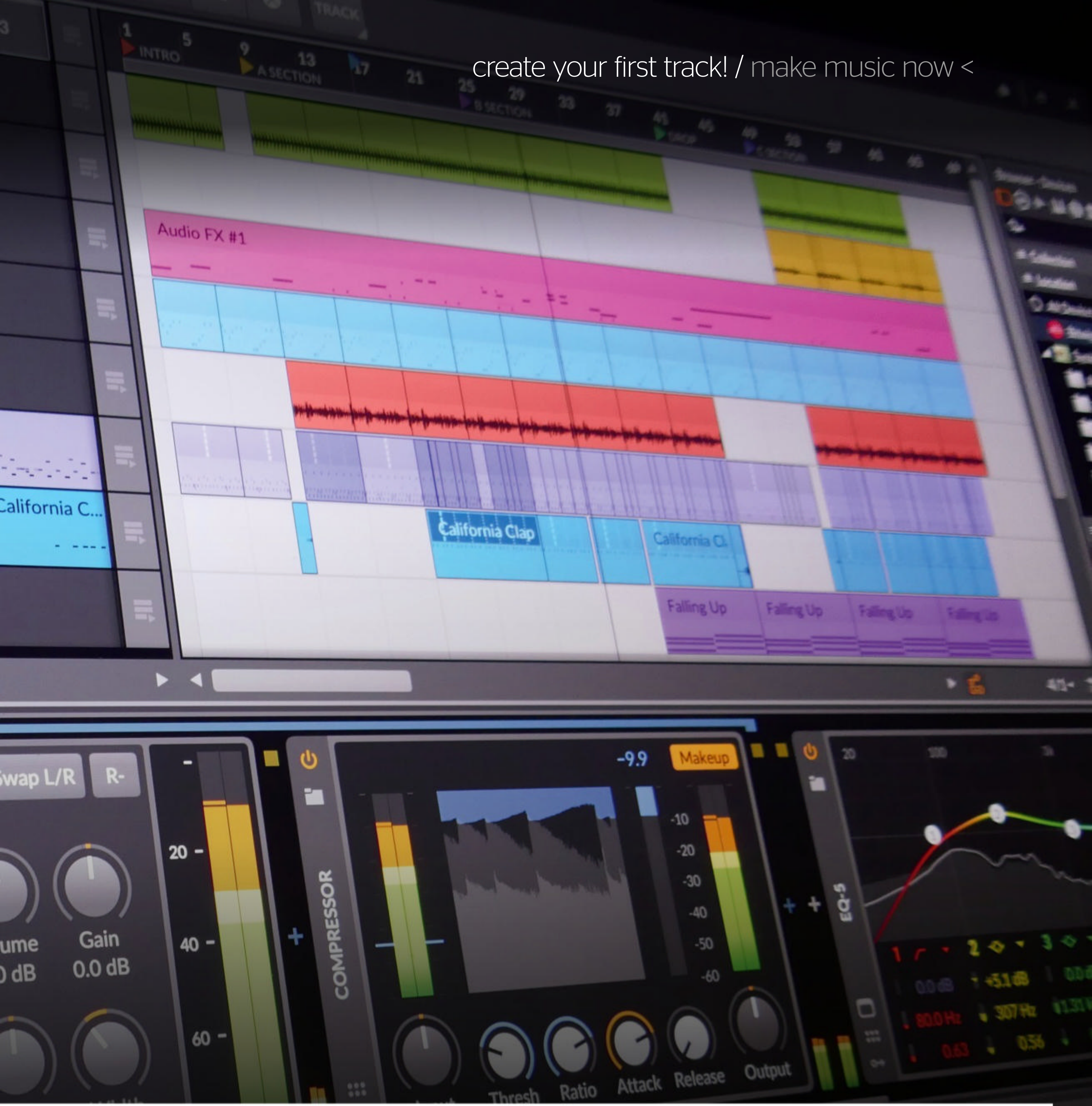


STEP 5
When you load your DAW it should pick up the new plugins you have installed. If not you might have to restart your computer. Now, install the plugin from your DAW plugin folder onto whatever mixing channel you want to use and you are good to go.

E Guitar 1
Audio FX
Bass
EQ-5
Legend 707 Kit
Expression
-7.9

Make your first track with BITWIG STUDIO 8-TRACK

Use your free DAW and this guide to make a tune from start to finish!



> **For this special Beginner's Guide To Music Production we have a complete and free piece of software for you to start making music with: the excellent Bitwig Studio 8-Track for Windows, OS X and Linux. It is an entry-level version so has some intentional limitations but, nevertheless, is all you need to make music now!**

It is also very easy to use so you can take full advantage of Bitwig's simple drag and drop workspace, and a selection of instruments and effects which enable you to create a complete piece of music.

The free licence with this guide gives you access to the Essentials software pack, which includes Bitwig-ready audio loops, various instruments such as the excellent Drum Machine, FM-4 and Polysynth, and a bunch of Bitwig's own effects. In our tutorial, we'll build a track from scratch, using components from this Essentials bundle as well as some choice sounds, instruments and effects from our very own **cm** Plugin Suite that we detail in the main Beginner's Guide starting on p8.

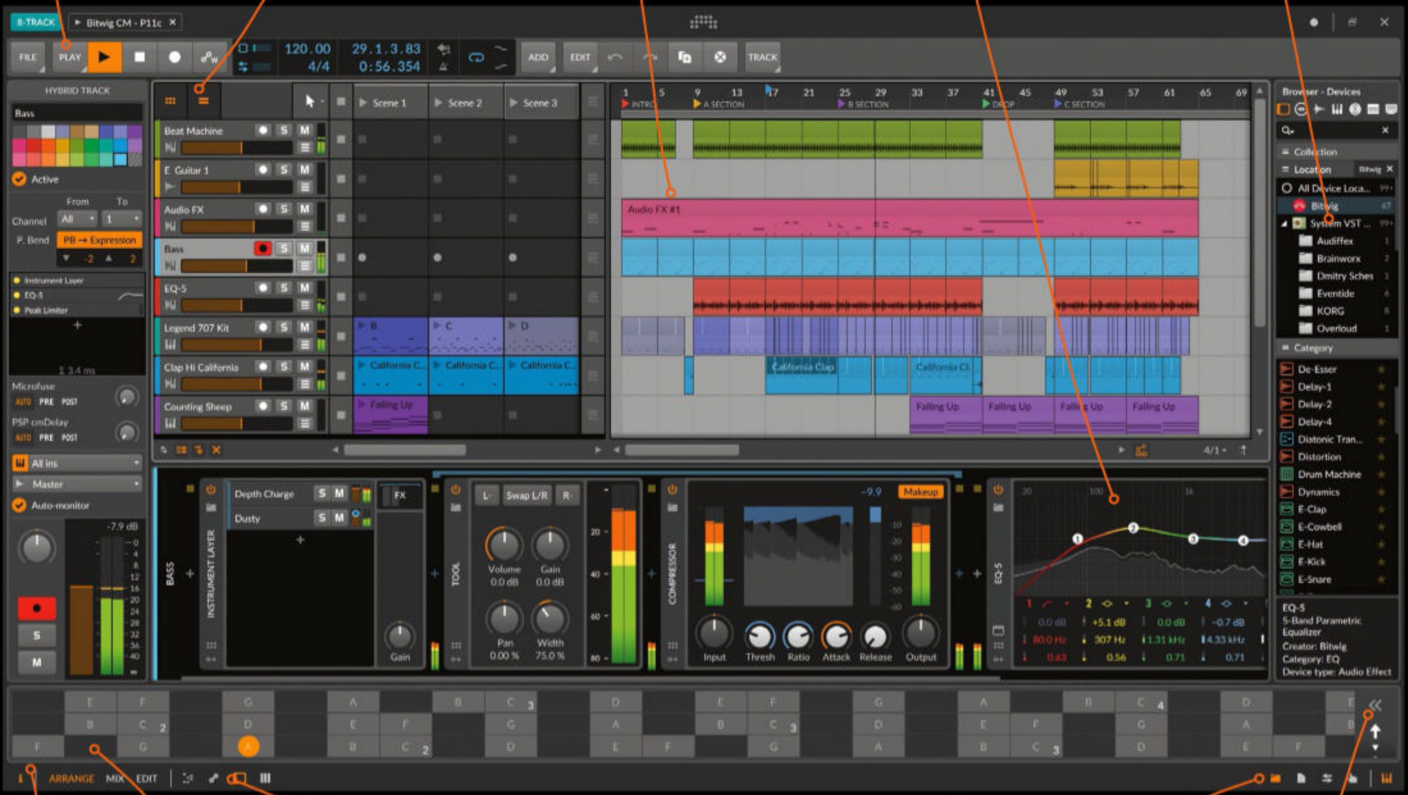
All of the software, videos and audio with this feature are available from filesilo.co.uk (Bookazines/Beginner's Guide To Computer Music). To follow the tutorial you need to install the main Bitwig Studio 8-Track software, two instruments from the **cm** Plugin Suite (DopeVST Beat Machine CM and Dmitry Sches Thorn CM) and four effects (Surreal Machines microfuse, OverTone DSP PTH2A-CM, D16 Frontier, PSP cmDelay). To install Bitwig Studio 8-Track, visit the link in the 'Bitwig 8-track instructions' document at FileSilo.co.uk (sorry, we have to place it there to stop piracy). You'll get a code emailed to you and you are good to go!

Follow the steps as closely as you like, or simply open the included tutorial song to see what we did. Your copy of 8-Track also provides a discounted upgrade path to both Studio 16-Track and the full version, Bitwig Studio.

So, time to make your first piece of music, so turn the page and dive in!

The main screen

Let's take a closer look at the main screen in Bitwig Studio 8-Track to tell you what each part does...


8-TRACK
Bitwig CM - P11c
FILE
PLAY
120.00
4/4
29.1.3.83
0:56.354
ADD
EDIT
TRACK
HYBRID TRACK
Scene 1
Scene 2
Scene 3
Beat Machine
E Guitar 1
Audio FX
Bass
EQ-5
Legend 707 Kit
Clap Hi California
Counting Sheep
Browser - Devices
ARRANGE
MIX
EDIT

MENU BAR
In the menu bar there are various options like Playback Settings and setting up the time display

TWO SEQUENCERS
Two different ways of putting tunes together are selected here – see sections 3 and 4 in main tutorial for more

CLIPS
Audio clips and MIDI clips are the key building blocks to your song

DEVICES
Devices provide sounds and effects so include instruments drums and so on

BROWSER
Includes seven tabs that will help you find devices, presets, sound clips or simply hunt through your hard drive

INSPECTOR
The Inspector provides more detailed information for a variety of items you select

LAYOUT
Switch between Bitwig's three main areas: Arrange, Mix and Edit

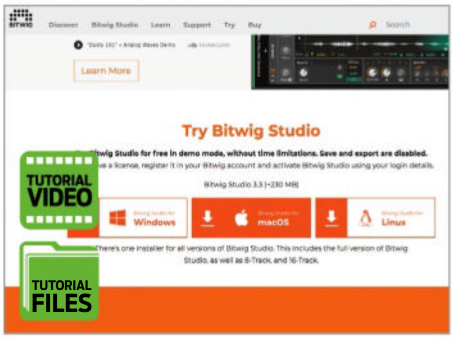
BOTTOM PANEL
Manually select the bottom panel – options include Devices, Mixer, Automation and Editor

SIDE PANEL
The foldaway panel on the right-hand side accesses four additional areas

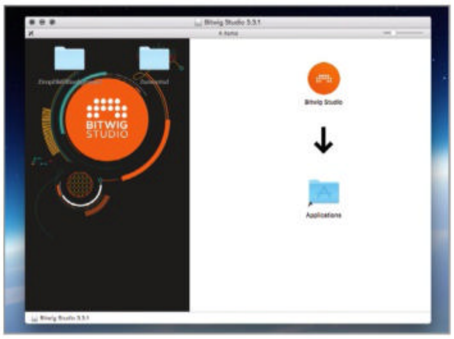
KEYBOARD PANEL
This allows you to select an on-screen keyboard for easier playing and recording

> Step by step

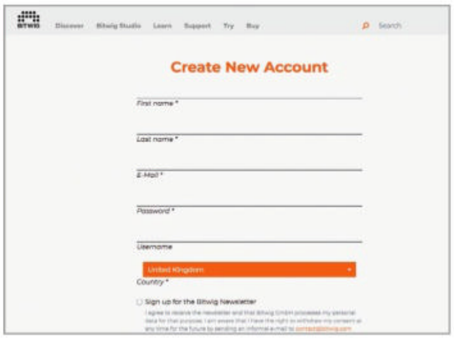
1. Install and activate


Try Bitwig Studio
Windows
macOS
Linux
Learn More

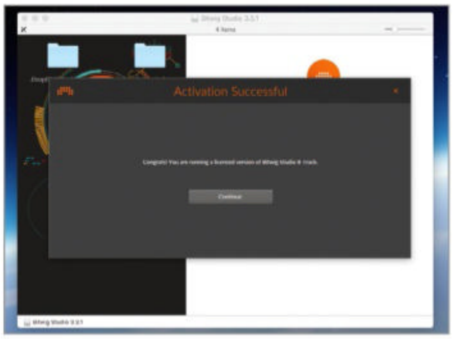
1 > The first thing you need to do is go to the main Bitwig website and download the installer. This is available at their home page www.bitwig.com 8-track/. Select Mac, PC or Linux depending on your computer system.


BITWIG STUDIO
Bitwig Studio
Applications

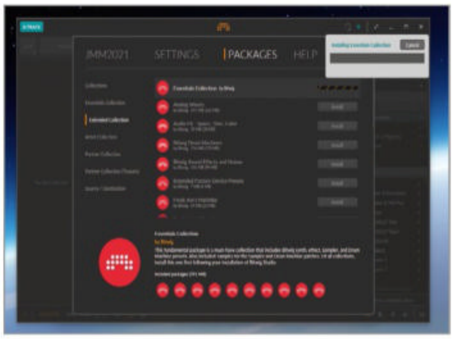
2 > To get started, download and run the correct installer for your platform. We're using the Mac version and you'll notice you simply need to drag and drop the application disk image into your applications folder.


Create New Account
First name *
Last name *
E-Mail *
Password *
Username
United Kingdom
Country *
Sign up for the Bitwig Newsletter

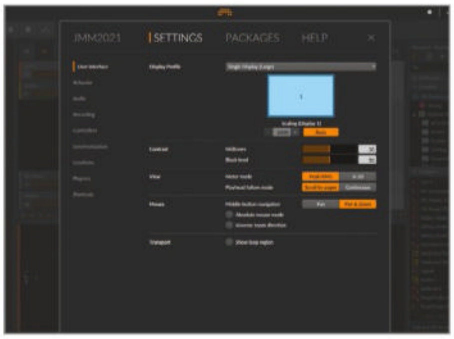
3 > Next up, you need to set up a user account here www.bitwig.com/account-register. Make sure to verify your email address by clicking on the link they email you, then log in and go to your Account Info page. At the bottom there's an option to add a serial number. Enter your special Bitwig code that you should have been emailed by filling in the form as detailed on p17..


Activation Successful
Continue

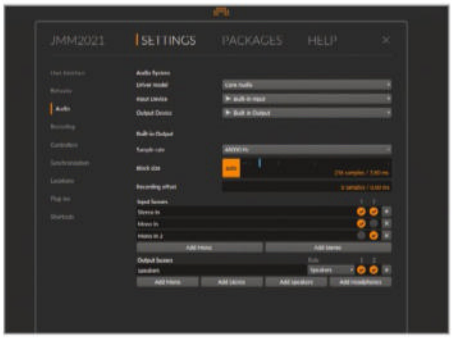
4 > When you first launch Bitwig Studio it will prompt you to log in. This is used to check your authorisation and activate the correct version. It will then run a check for plugins. This will take some time for the first install but be much quicker when you use the software the next time.


JMM2021
SETTINGS
PACKAGES
HELP

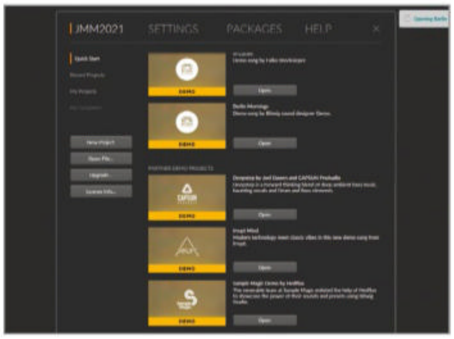
5 > Next it will ask you whether you want to install any content. Bitwig Studio 8-Track includes the Essentials bundle which is 500MB of instruments, loops and presets. We'll be using this in the tutorial so go ahead and install it. Ignore any other packages listed, as they need additional authorisations.


JMM2021
SETTINGS
PACKAGES
HELP

6 > With everything checked and installed, you'll land on the Dashboard screen. This includes various options and features and you can also access the main settings pages which includes everything from setting up your audio interface – see next step – to managing your instruments and effects. It can be accessed at any time via the Bitwig dotted icon at the top.


JMM2021
SETTINGS
PACKAGES
HELP

7 > At this stage, it's worth checking the audio interface settings are correct, so select the Audio tab in the Settings page. Select your input and output device. Your interface name and type should be an option here so simply select it and you will be good to go.


JMM2021
SETTINGS
PACKAGES
HELP

8 > Finally, it's time to launch a project. Select the user name tab as this opens the project options. On the next page we will run through how to get around the software so it will be useful to have a complete song to look at. From the quick start folder load the *Berlin Mornings* demo song.

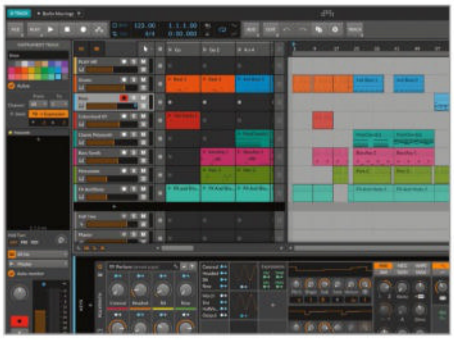
POWER TIP

>Help panel

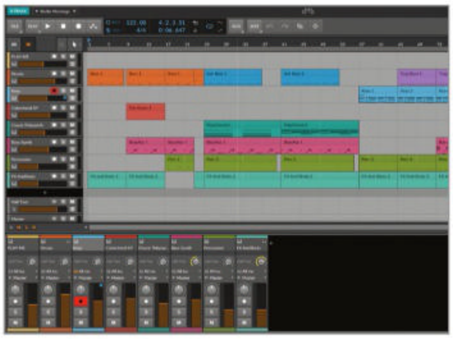
Here you'll find links to Bitwig's online tutorial videos and also the regular manuals. This documentation is stored locally so if you just want to view the getting started guide or full manual there's no need to be online. Bitwig's manual is full of great tips; meanwhile, in the online tutorials you'll find handy walkthroughs explaining things such as Bitwig's various systems, plus pay-for tutorial videos from AskVideo.

> Step by step

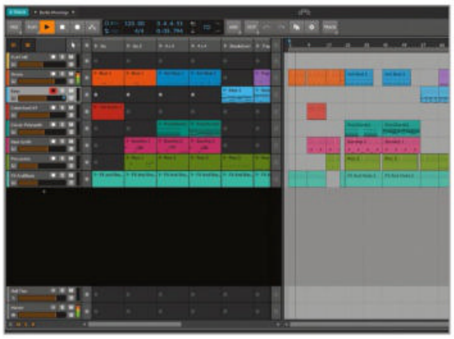
2. An overview of Bitwig Studio 8-Track



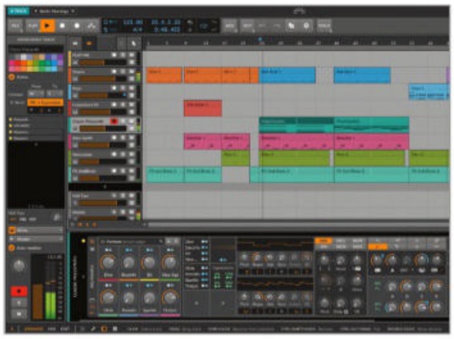
1 > Bitwig Studio might initially look a little complex but is actually fairly straightforward. Your song is built from audio and MIDI clips and as with most DAWs, the latter of which are played by instruments. Double click on the second track, Drums, and you will see the notes here are played by the Drum Machine instrument. Now click on the next track, Keys, and it will show the Polysynth.



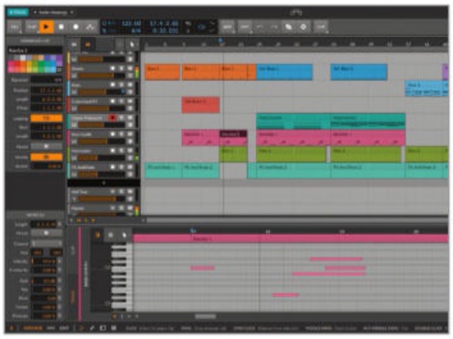
2 > Bitwig's main central panel has three views – Arrange, Mix and Edit. Select one of these at the bottom left of the overall window. Arrange is the main view and actually contains two options: the Arranger Timeline and the Clip Launcher. You can view them separately or together using the icons in the top left of the panel.



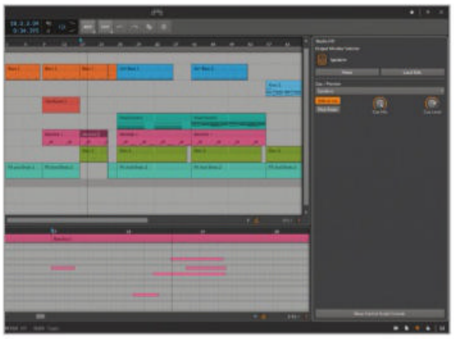
3 > Arranger Timeline shows your song and tracks more traditionally, so it moves from left to right as the song plays. Clip Launcher, meanwhile, works as a performance instrument so you can play (launch) and audio or MIDI 'clips' (loops or single sounds) whenever you like. With both active, try dragging the window splitter to resize each panel.



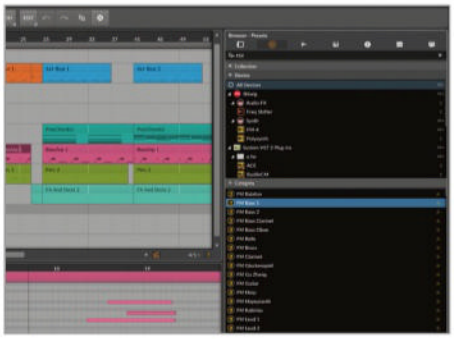
4 > The Inspector is a foldaway panel on the left of the main window. It is opened using the 'i' icon at the bottom left of the overall window. The Inspector gives more detail on whatever is selected. Select the Classic Polysynth track, for example, and you'll see extra details including the volume fader. Or select a clip and you'll see the clip's details.



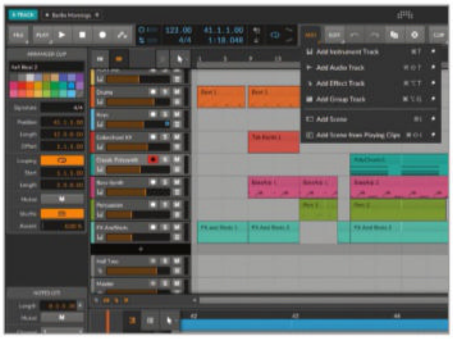
5 > The foldaway bottom section hosts up to four panels – Detail Editor, Automation Editor, Device and Mixer – depending on the main panel. You can choose which panel is visible using the icons in the bottom left window. You'll find the Detail Editor, Device panel and Mixer panel can also be switched on by double clicking clips and tracks.



6 > On the right-hand side, a further resizable panel has four options – Browser, Project, Studio I/O and Mappings – which you select from the icons in the bottom right of the window footer. The Browser is the most significant as it includes seven tabs to help you find what you're looking for.



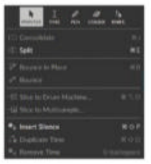
7 > The Browser is where you can find presets, instruments, plugins, clips, and also browse your computer for audio files. Bitwig calls plugins and instruments 'Devices' and the Browser includes both 'raw' or empty Devices such as the FM-4 synth in the Devices tab, and those that call up ready-made sounds (Presets) such as FM Bass 1 in the Presets tab.



8 > The Menus bar at the top of the screen includes various important options. On the far left are File and Play menus. Next are the transport controls to stop and play a song (and record tracks) or fast forward and rewind plus a time display. Finally, next to these are the Object menus with further editing options including copying and pasting sounds and notes.

POWER TIP

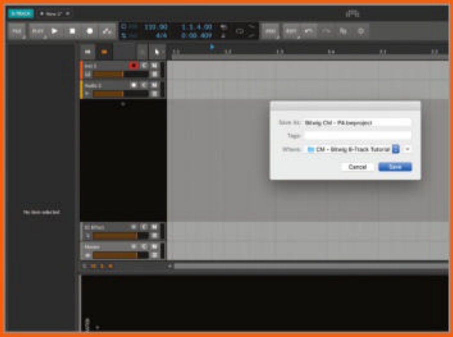
>The smart cursor



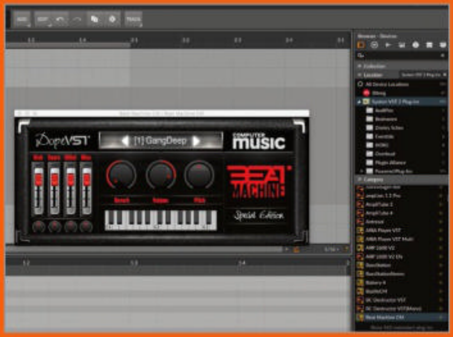
Bitwig's cursor has what they call 'smart tool switching' which means that it changes its use according to where it is on screen. For the side panels, it behaves like a standard mouse pointer. Place it in the Timeline and it doubles as a zoom tool and loop point selector or switches to a crosshair. On clips, it's a pointer over the top section, a selector over the bottom or edits – trim, fade and loop – as you move from the top to the bottom of the block.

> Step by step

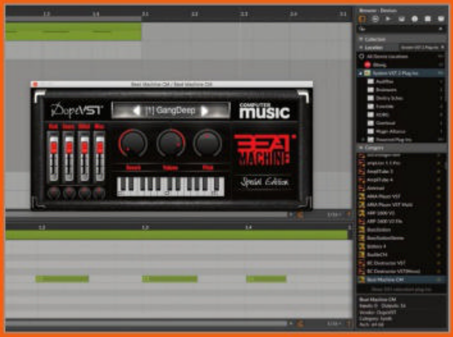
3. Getting started



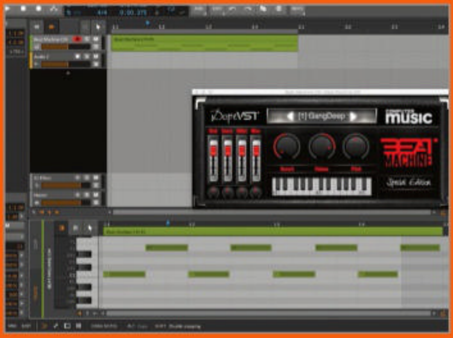
1 > Now let's create a song. If you get lost then load in our song 'Bitwig CM - programming'. Select the File menu and New Project. Adjust the tempo in the display to 120bpm. In the File menu, Save the project. The default project has one audio and one instrument track. Install Beat Machine CM (see p8), and load this drum machine into the instrument track.



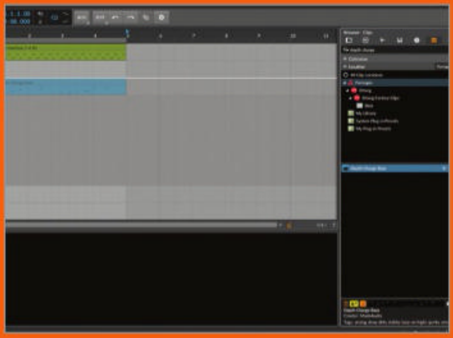
2 > In the Devices browser, select the System VST 2 list and find Beat Machine CM. Drag this onto the blank instrument track. Select the Track Arm button next to the track name and activate the Caps Lock on your computer keyboard. If you now hit the letter A on your computer keyboard it should play a kick drum.



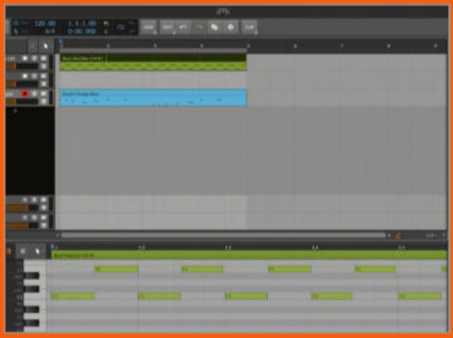
3 > Now record kick hits on the four beats by doing the following. Over in the top of the Time line (top of the window), use the Pencil cursor to select a one-bar loop (drag the loop point along one bar). Activate the Loop icon in the display. Select the Record and Play buttons, recording the kick on the four beats.



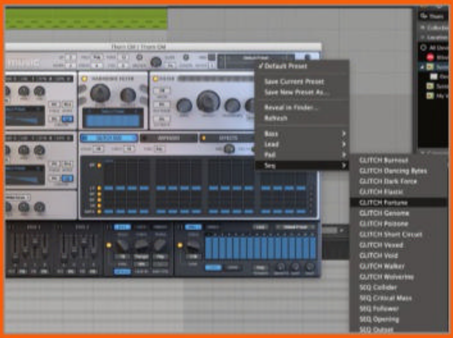
4 > Switch off the Caps Lock and double click on the MIDI clip you've recorded to open the Editor panel. Drag the cursor across the four notes and then hit Q to quantise them (put them in time - see bottom right) onto the beat. Now select all four notes again and press Alt and drag them to make copy as shown.



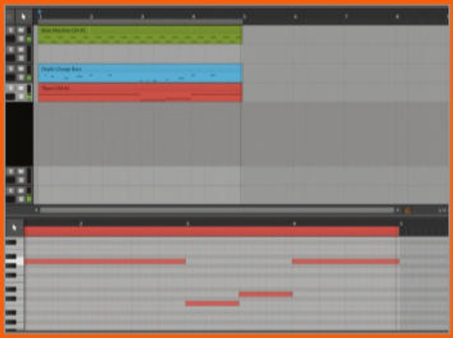
5 > Next we're going to import a MIDI bass part from Bitwig's library. Select the Clip Browser and in the search bar type 'Depth Charge Bass'. In the Browser bottom panel you'll see the blue clip. Drag this into the Arrange Timeline. Bitwig automatically creates a track for it.



6 > The bass part is four bars long so we need to extend our beats. We could copy the blocks but Bitwig also has a loop option. Position the cursor to the bottom right of the beats clip. This invokes the loop cursor. Drag this to the right to match the length of bass clip.

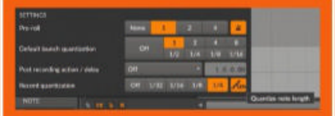


7 > Next add a sequenced synth part. Select the Device browser and in the search bar type Thorn. In the bottom panel you'll now see ThornCM. Drag this to the Arrange panel. Open the instrument window from the window icon on the Inspector. In ThornCM's preset list find and load the Seq patch GLITCH fortune.



8 > Let's program the part. Activate caps lock and play and record notes G1, C1, D1 then G1 again to match the moves in the bass - that's keyboard keys H, A, S then H. G1 is two bars, then half a bar each of C1 and D1 then another bar of G1. Turn off Caps Lock and hit Q to quantise.

POWER TIP

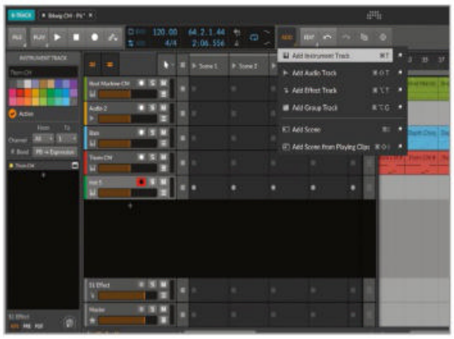


>Record Quantize

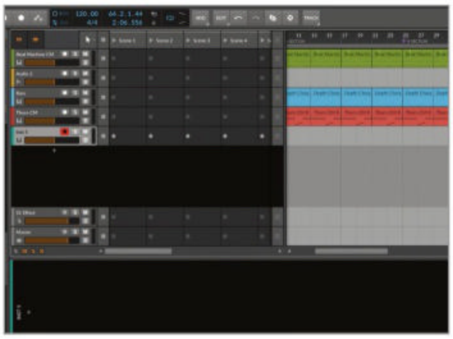
If you're not the greatest keyboardist or your timing isn't brilliant, then you can make your life much easier and programming quicker by using Record Quantize. Click on the Play menu in the top left and look right at the bottom of the list. Select a division that works for the part you're playing - here we've selected ¼ notes and also note length quantising. Then simply record as normal and you'll find the notes are ready put in time.

> Step by step

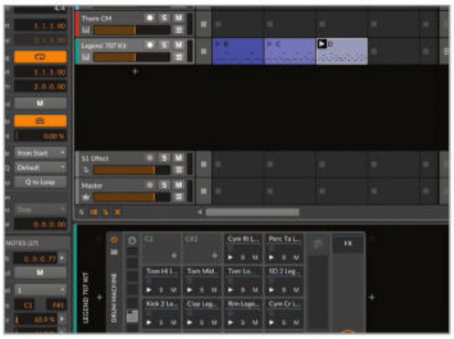
4. Ready to Launch part 1


Add Instrument Track
Add Audio Track
Add Effect Track
Add Group Track
Add Scene
Add Scene from Playing Clips

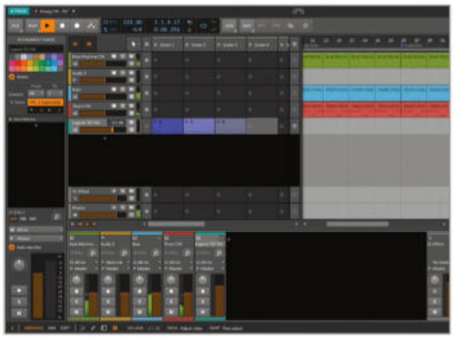
1 > In the walkthrough on p20 we talked about Bitwig's two sequencer types – Arranger and Launcher. We've used the Arranger for our song basics. Now let's use the Launcher to create some extra parts. Click on the Launcher icon in the main window and you'll see a split screen. If you like, use the Window Splitter bar to adjust the screen split size.



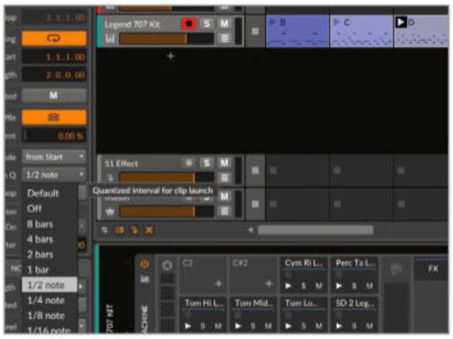
2 > Now from the Add menu in the Windows bar create a new instrument track. We are going to use this track for our first set of Launcher clips. These clips need to work together so head to the browser and select the clips tab. In the search bar type 'Legend 707'. This brings up a selection of related house loops from the same kit.



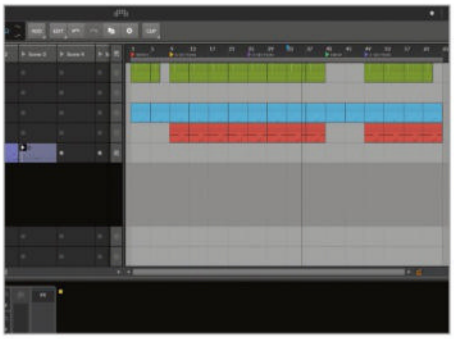
3 > You can play the loops in the browser by hovering over them and clicking their Play icons. We've chosen three for a bit of variety: Clean 01 B, C and D. Drag these or your own into the Launcher slots in the new track. To make things a bit more clear, we've also coloured them and named them in the inspector.



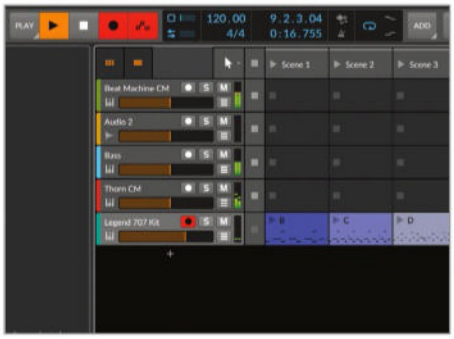
4 > Launcher is designed for live play, so this is what we'll do. It is more creative and fun than simply programming notes, and when we're happy with what we've got we easily can transfer it back into the main Arrange area. To get started we need to turn up our new loops using the track fader.


Quantized interval for clip launch
Default
Off
8 bars
4 bars
2 bars
1 bar
1/2 note
1/4 note
1/8 note
1/16 note

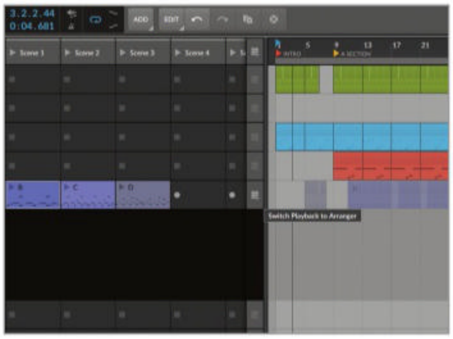
5 > Launcher plays clips to start in time with the bars or beats and if you select a Launcher clip, the inspector shows its many parameters. We're only interested in the launch Q settings. Select all three clips and change this to ½ note, which allows us to launch the clips every half bar.



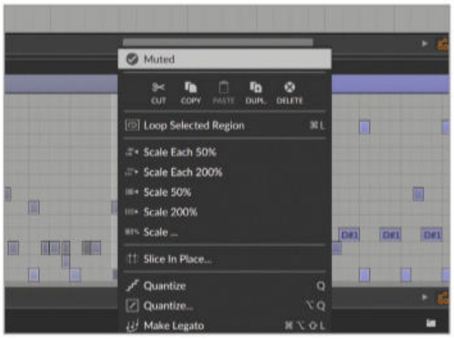
6 > Next up, zoom the Arrange Timeline section so that the whole 64-bar arrangement is clear and make sure the playback cycle is looping around all 64 bars. Now hit Play and launch the new loops using their Play icons. If you want to stop them with the main arrangement still playing, use the Stop icon to their left.



7 > To capture your loop performance jam you need to have the Record button enabled on their track, then if you select Play and Record on the main transport controls, the MIDI from the clips you're launching gets recorded into the Arrange Timeline. It's that simple.


Switch Playback to Arranger

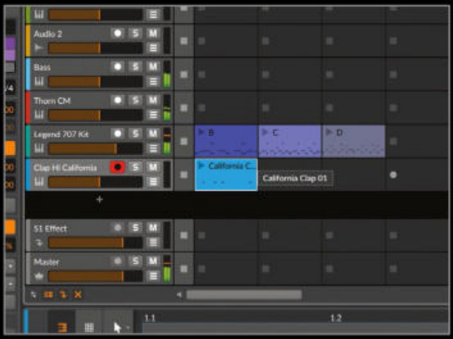
8 > Here we've played our part in a few attempts over different sections of the arrangement. To switch over so that the track now plays back the arrangement sequencer for these parts, click on the icon just next to the window split. You'll see the context message 'Switch playback to arranger'.


Muted
CUT
COPY
PASTE
DUPL.
DELETE
Loop Selected Region
Scale Each 50%
Scale Each 200%
Scale 50%
Scale 200%
Scale ...
Slice In Place...
Quantize
Quantize...
Make Legato

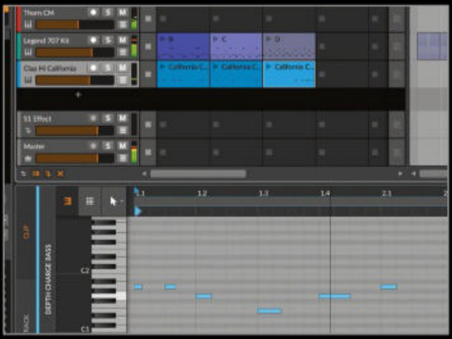
9 > Now that we've got our parts back in the Arranger Timeline, it's easy to make specific edits, so our final task with these loops is to zoom in and edit the MIDI as required. We've simply muted a few beats here and there, but it all contributes to making the song more organic.

> Step by step

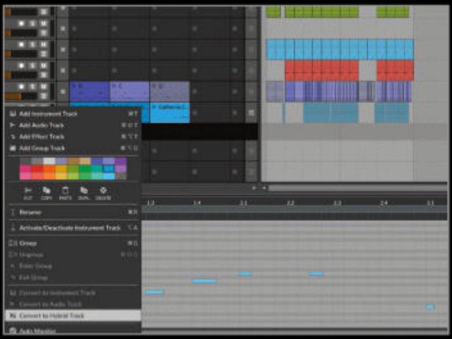
5. Ready to Launch part 2



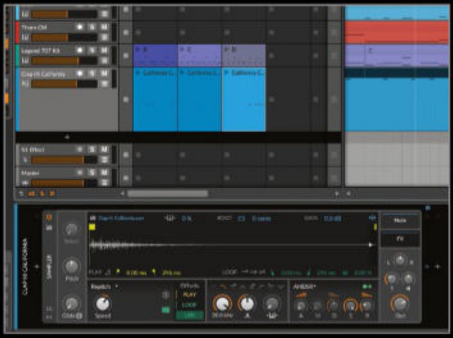
1 > Now let's look at some other things that we can do with Launcher clips while continuing to build the track. First up, we're grabbing a clap loop from the Clip browser. Create a new instrument track and then search for California Clap 1, loading this into a Launcher slot.



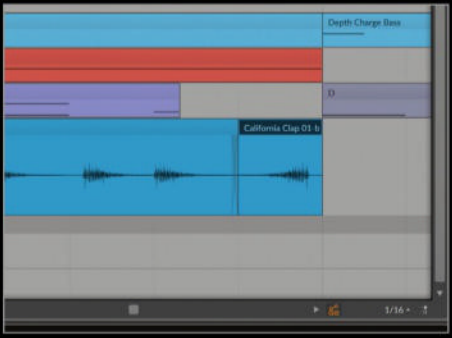
2 > Now copy the clip into two more Launcher slots. When we double-click each clip it shows us its notes in the bottom panel editor, so we can easily edit these notes and create further slightly different clap loops. This is what we've done and then re-trod our steps from the previous page to create our clap part.



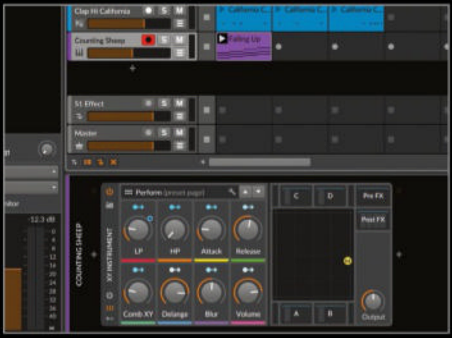
3 > Bitwig allows us to have hybrid tracks that combine MIDI and audio clips. Let's explore how we can use this for our claps track. First up, right click on the track header and select the Convert To Hybrid Track option at the bottom. Now select one of the MIDI clips and from the Clip menu at the top choose Bounce In Place.



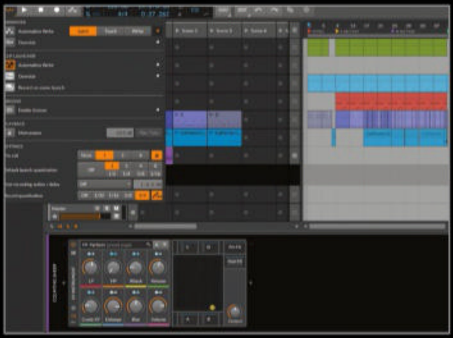
4 > Now you should have a track with MIDI clips and an audio clip. What this means is we can process the two differently. First thing we're going to do is move the claps up in pitch. Select one of the MIDI clips and open the Track Device panel at the bottom, then adjust the overall pitch up a few semitones.



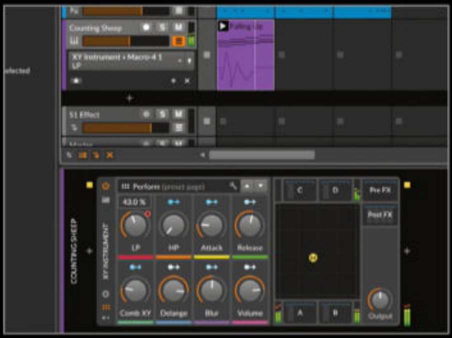
5 > This basic example shows how we can create two different sounds using audio and MIDI within the same track. Now let's split the last clap away from our audio clip. This edit function is a right click option and cuts the clip at the cursor position. Then from the clip menu choose Reverse and slide the clap slightly later.



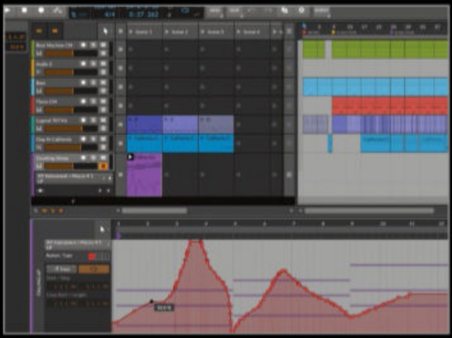
6 > The next thing we can do with Launcher clips is add automation which allows us to record changes in things like volume. Create a new instrument track and search for a clip called Falling Up. Drag this into a Launcher slot. Then open the device in the Device panel and open its remote controls – the six dots icon in the bottom left.



7 > Trigger the Launcher clip and try the remote controls. We're going to use the low pass and record its behaviour throughout the clip. From the Play menu select the Automation Write option for the clip launcher. Also open the automation lane on the track header – this is the orange button below the mute button.



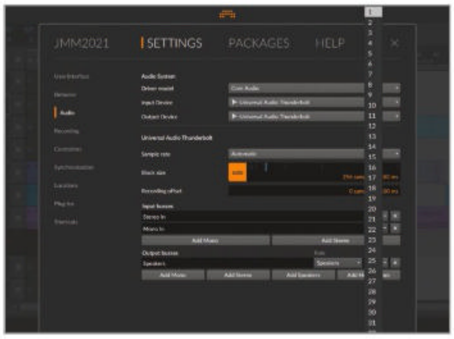
8 > We should now be all set to write the automation and when we look at the Low-pass control it should have a red dot next to it. Now we simply launch the clip and tweak the Low-pass control. You should be able to see it writing the automation in the track lane.



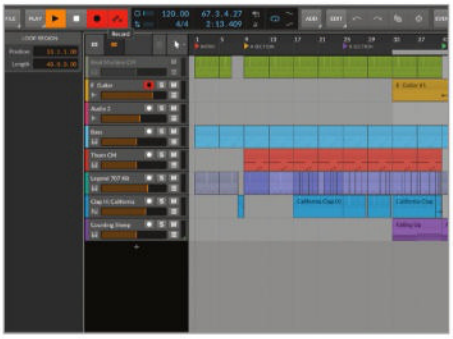
9 > Double click on the automation below the clip and it opens the Automation Editor panel at the bottom. Here we can fine tune the Launcher clip automation. Automation is red for Launcher clips and blue for Arrange clips. Now we can create a part using Launcher or drag the clip with its automation into the Arrange Timeline.

> Step by step

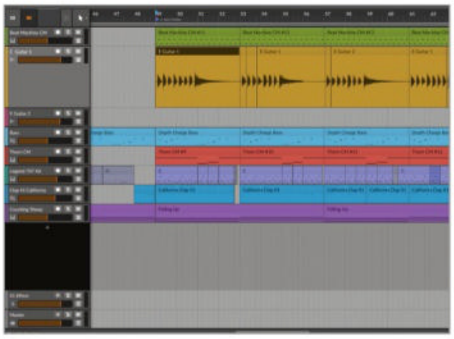
6. Recording and editing sounds from the 'outside' world



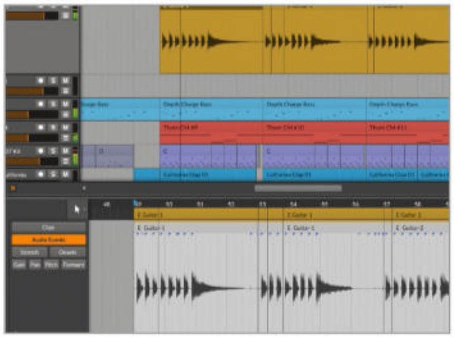
1 > Now let's move away from instruments within Bitwig and record audio from the outside world - guitar, singing etc. Select the track Audio 2 and in the Inspector, click on Stereo In. In the menu choose Add Buss. Create a mono input specifying which interface input it should use. (Your audio interface's inputs should show as an option here.)



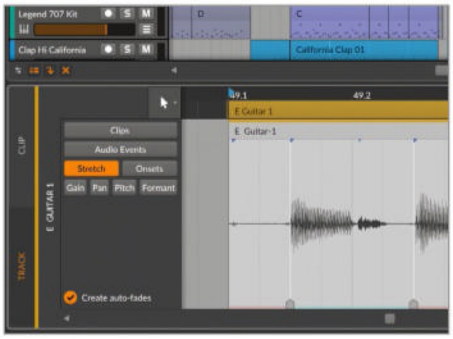
2 > We're going to record an electric guitar part, but you can record whatever you like. The audio we recorded is in the Create Your First Tune folder at filesilo.co.uk (guitar.wav), so you can use that instead. To record, select the mono input created in step 1, activate Track Record, adjust the gain on your interface and select Master Record and Play.



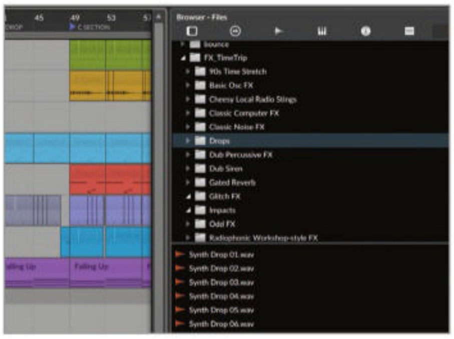
3 > We only have two tracks left so we've recorded two sections of guitar on two tracks and can now edit them onto one of those tracks. We've picked the best sections ready for some further editing and merged them together – a process called 'comping'.



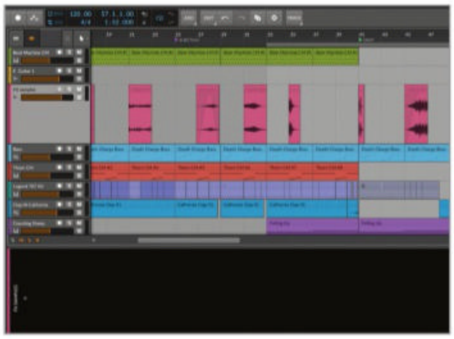
4 > The timing on our guitar could be tighter and Bitwig include a stretch option to adjust audio timing. Double click on the guitar track to open the Detail editor panel at the bottom. This has two tabs: Clip and Track. Selecting the Track option shows our whole guitar part in its correct position in the song.



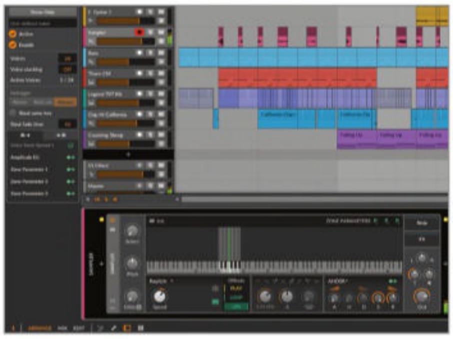
5 > To start editing, select the Stretch option on the left of the editor panel, zoom in and decide what to adjust. To adjust the timing, grab the Beat Marker and drag it. They will line up (snap) to the grid. For fine adjustments press Alt.



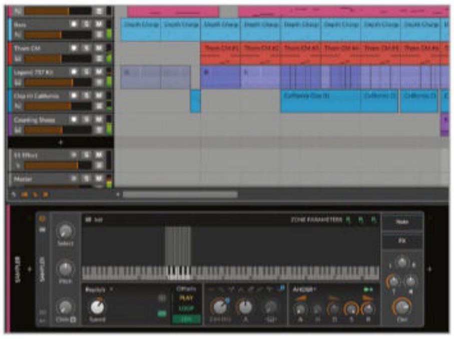
6 > We have one track left and it's time to add in some audio effects. These samples are included in the Create Your First Tune folder at filesilo.co.uk. In order to import the audio samples head to browser, use the Files tab and navigate to the samples folder at filesilo.co.uk.



7 > We've added 12 audio effects to the track and we're going to then add them to a Sampler instrument. Alas 8-track restricts sample editing. However, by editing the audio effects in the track and then dragging them all onto the Sampler instrument we can play our samples across the keyboard.



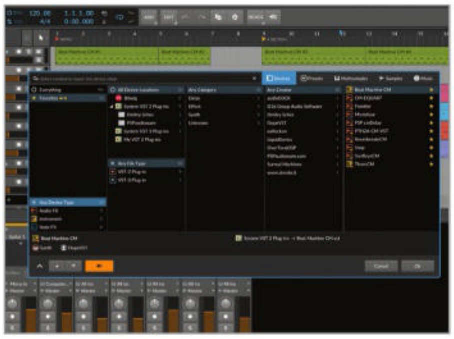
8 > Edit the effects however you wish then, from the Track menu, convert it to a Hybrid track. Drag in a Sampler from the Device browser. Drag the 12 samples onto the Sampler. Bitwig will automatically bounce the audio sample clips for the Sampler. Finally, mute and move the samples in the Arranger Timeline.

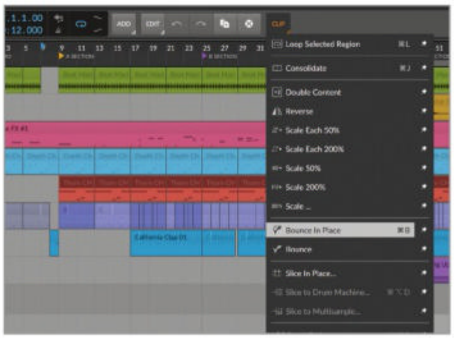


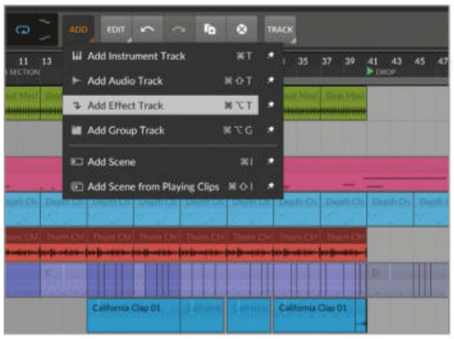
9 > Our final task is to program the effects. We're going to do this straight into the Arranger Timeline. Using a multisampler device rather than using audio samples means we can use multiple sounds at the same time.

> Step by step

7. Mixing part 1 – adjusting volume levels and effects



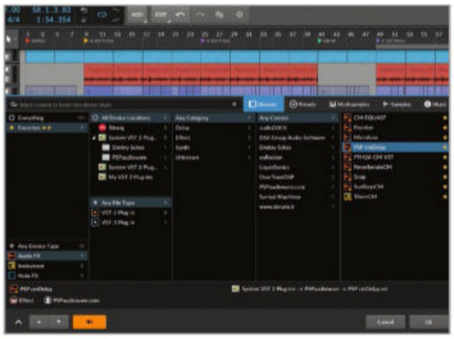

Loop Selected Region
Consolidate
Double Content
Reverse
Scale Each 50%
Scale Each 200%
Scale 50%
Scale 200%
Scale ...
Bounce In Place
Bounce
Slice In Place...
Slice to Drum Machine...
Slice to Multisample...

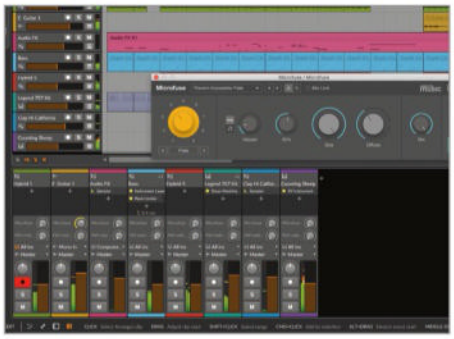

Add Instrument Track
Add Audio Track
Add Effect Track
Add Group Track
Add Scene
Add Scene from Playing Clips

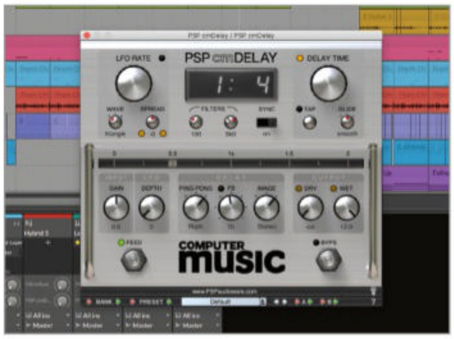
1 > Now we've built our tune, it's time to put together a mix. We're going to use a mixture of CM VST plugins and Bitwig effects. We've installed a handful of CM VST effects- see p8 onwards on how to do this - to choose from. In the Devices browser, try using the Favourites star so these are easy to find.

2 > Bitwig Studio 8-Track is limited to two VST plugins so we need to turn current VST instruments - Beat Machine CM and Thorn CM - into audio tracks (by 'bouncing' them) to free up these slots. In each track, select the clips and from the Clip menu choose Bounce In Place which creates an audio version of them. Now select the devices and remove them.

3 > Our next limitation is send effects. 8-Track allows only two. One has already been included when we created the basic project. To create a second send track choose Add Effect Track from the Add menu.



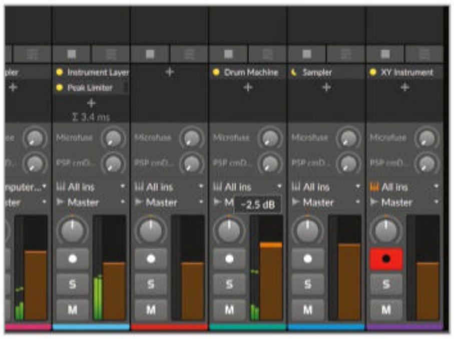


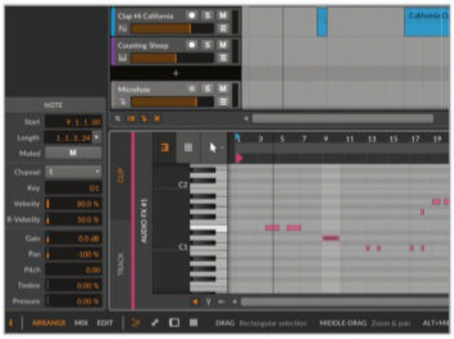

PSP cmDELAY
LFO RATE
DELAY TIME
FILTERS
SYNC
PING PONG
FB
WET
COMPUTER music

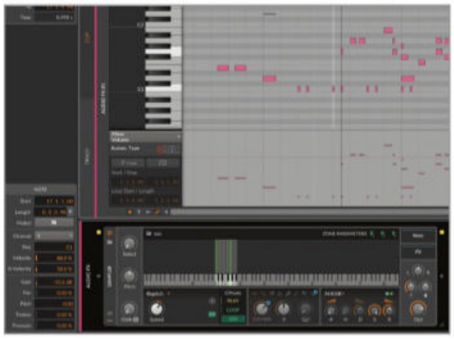
4 > Send effects are usually used for shared processing such as reverb or delay. We're going to use our two VST slots for reverb and delay from our CM plugin library - Microfuse reverb and PSP cmDelay. With the Mixer editor open, use the plus sign on the effects channel to load these to effects 1 and 2 respectively.

5 > Now, open the Microfuse plugin window using the Window icon next to the insert. From the plugin's preset menu at the top select Reverb Impossible Plate. As this is a send effect, set the Mix to 100%. Also trim the Regen of the reverb to about 0%.

6 > We're going to use PSP cmDelay as a ping pong quarter-note delay. Open the plugin window and modify the default as follows. Activate Sync and set Delay to 1:4, set Ping Pong to Right and FB to 70. Finally, adjust the Dry level to its minimum and the Wet level to +12.


Instrument Layer
Peak Limiter
Drum Machine
Sampler
XY Instrument
Microfuse
PSP cmD...
All ins
Master
-2.5 dB





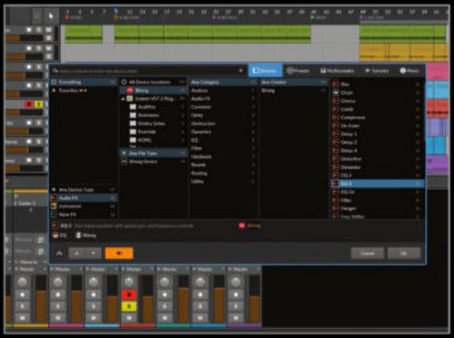
7 > Now let's look at our volume levels. As we've been working this has shifted a little, but most faders should still be set at -10dB. Switch to the Mix panel layout and set the guitar and audio FX tracks to -5dB and the Legend 707 and California Clap tracks to -2.5dB.

8 > Our next balancing task is to sort out the audio FX multisamples that we loaded into the Sampler. We can do this using a handy Bitwig option. Return to the Arrange Panel, select the Audio FX MIDI clip and open the Detail editor panel. Select one note event on the editor and you'll see the Note panel open on the left.

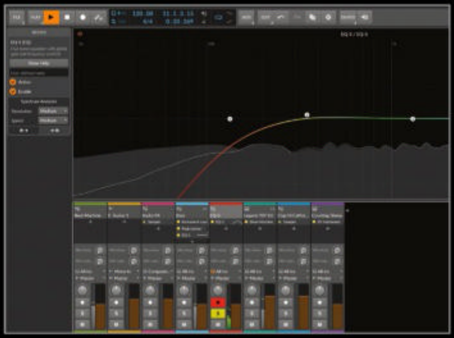
9 > The Note panel includes velocity (volume) as well as gain, pan, pitch and more. You can set these on a note by note basis and it's a great way to make detailed changes without using automation. Work your way through the Audio FX track adjusting levels, pan and pitch if you like to help balance the effects.

> Step by step

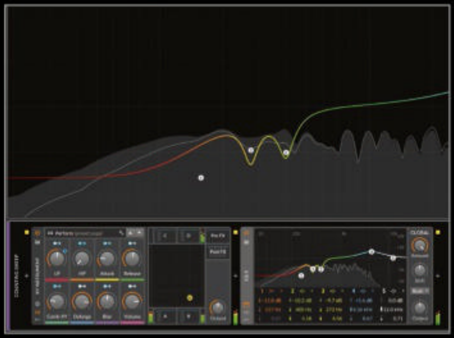
8. Mixing part 2 – an introduction to EQing



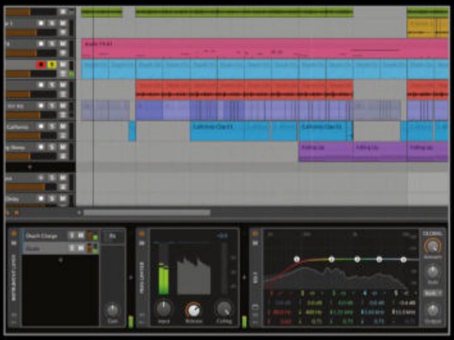
1 > Next up, we have some basic EQing to do which adjusts the bass and treble on each sound. On a few sounds there are excessive low/bass frequencies. Use the Channel Plus icon to add Bitwig EQ-5 insert devices on the Thorn CM, Bass and Counting Sheep tracks.



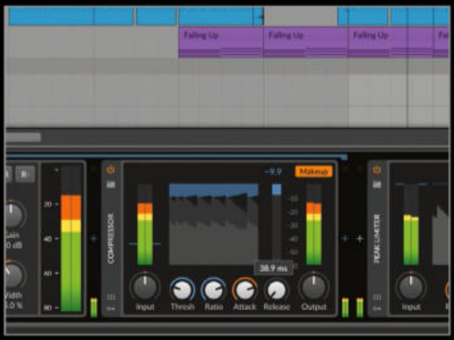
2 > On Thorn CM put high and low-pass filters on bands 1 and 5 of the EQ. We've used the '4-pole' option and frequencies are at 134Hz and 9.46kHz. Much like VST plugins you can float the Device window, but the corner arrow icon also allows you to connect/dock it into the top main Arrange area.



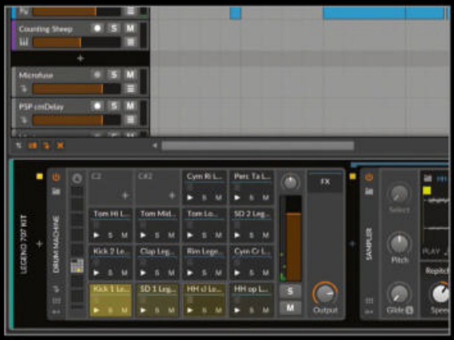
3 > The Counting Sheep part has some variable lower frequencies. We can address these with EQ. From the EQ-5, set the low band to shelf -16dB at 157Hz, then set two 'narrow cuts' (set the 'Q' to 4.5) for 272Hz and 400Hz. We've also boosted the frequencies a little at 4.36kHz.



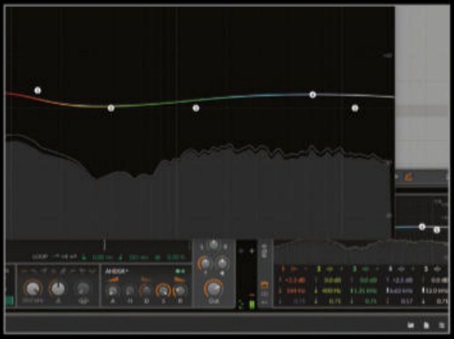
4 > The Bass doesn't have any serious low-frequency issues but we'll set up a high-pass filter at 80Hz as a precaution (it will cut any frequencies below 80Hz). On the bass device we can see it uses two sounds. Turning down the Dusty sound is better for the beginning of the track. We may change these levels later.



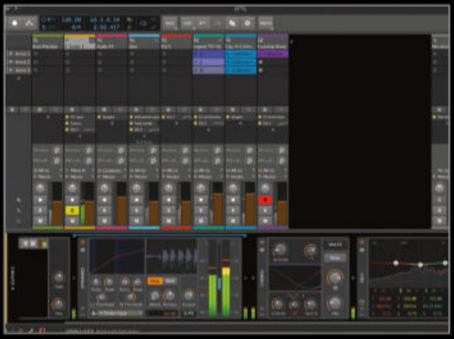
5 > If you click on the bass device and select its FX option it reveals the effects used in the bass preset. Adjusting the compressor ratio up to 4:1 and shortening the release to 38.9ms gives the bass a bit more pump and urgency. There's also a Crush setting on Depth Charge that we can ease back a bit.



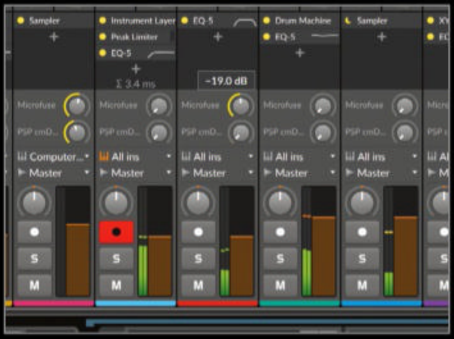
6 > Next up, the Legend house beats. The two main hi-hats are too loud and we can fix this quite easily in the device. Open the Device panel to show the Drum Machine. Select each of the two HH parts in turn, then on the Sampler panel to the right adjust down the Out gain to taste. We've chosen -2dB for each.



7 > The Legend House beats also need some sweetening. Add a shelf (a flat line) for the low frequencies and peak boost for the high frequencies. Try adding these settings: 3.3dB at 144Hz and 2.5dB at 6.63kHz.



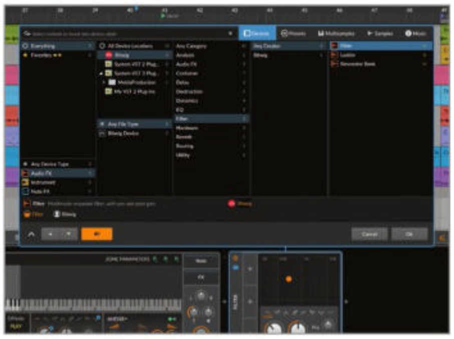
8 > The guitar is the rawest sound we have and needs compression and EQ. Bitwig has some great effects presets and we've chosen the Parallel Compression from the FX Layer folder. We've added the Chorus device with the Doubler preset and an EQ-5 with a broad 2db cut at 320Hz and tiny boost at 3.39kHz.

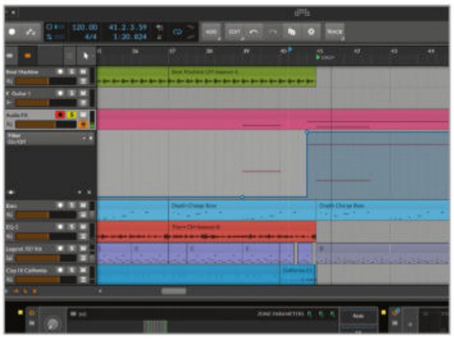


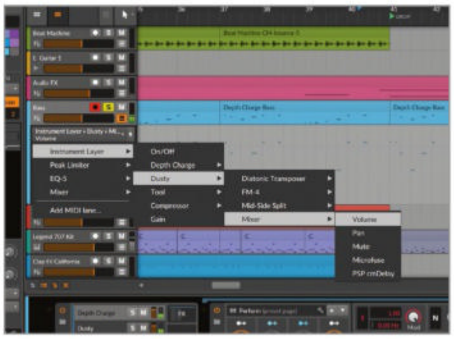
9 > Finally, for the guitar, we're going to add some send effects. A little of both works well: our settings are -24dB for reverb and -25dB for delay. We can now add some further send effects. For Thorn CM we're adding just reverb (-19dB) and for the Audio FX reverb and delay (-16dB and -21dB respectively).

> Step by step

9. Final tweaks and mastering



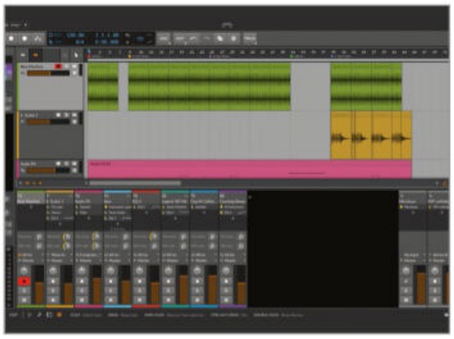


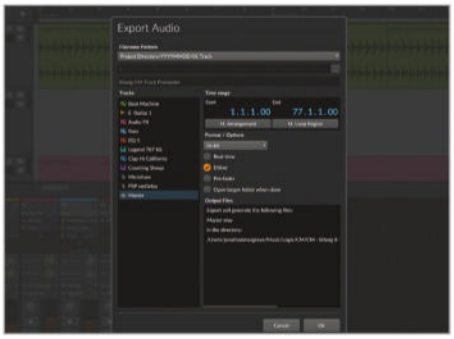


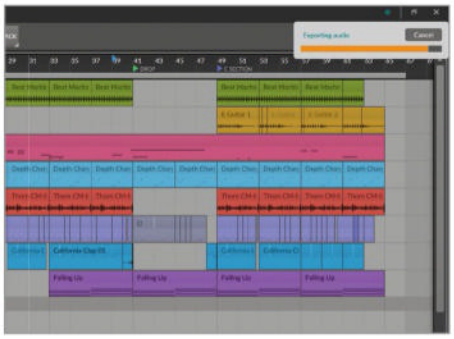
1 > The last part of song production is called mastering, where you make subtle changes to the overall sound by adding EQ or compression to give your track a 'pro' feel. Before we get onto that we have more effects to finally tweak. The drop section effect has a high-pitched whistle, so we'll use a Filter to remove this. Load one from the Devices browser.

2 > Set this to Band Pass, with frequency at 1.0kHz and bandwidth at 40%. Use the Automation icon on the Audio FX track to open a lane and then select On/Off from the Filter submenu. Click in the lane to add points (breakpoints) to the automation and adjust them so the filter switches on for the drop section.

3 > Finally, let's fade in the volume of the Dusty layer of the bass. Open the bass automation lane and from the Dusty Mixer menu select Volume. Add some points (breakpoints) and adjust it so that the level is quite low at the beginning (we've chosen -11dB) and then moves up at bar 9 (we've set it to 1.0dB).



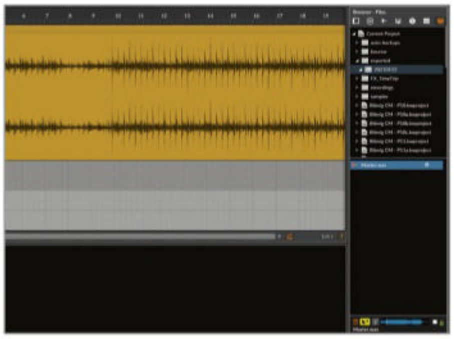


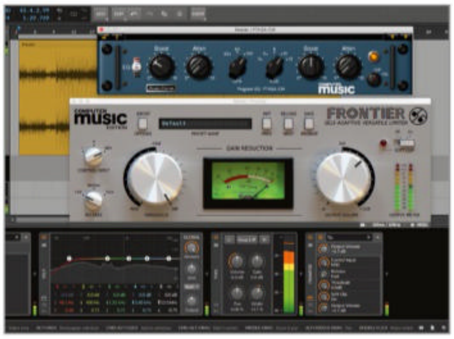


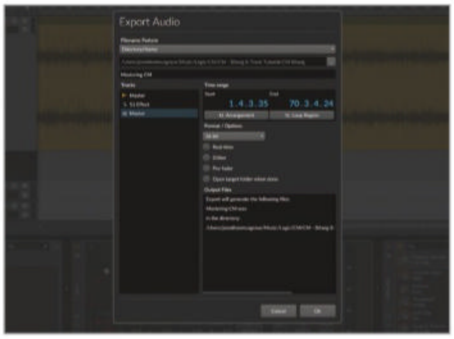
4 > It's now time to bounce (record to a stereo audio file) the mix and master it. We will master the mix in a fresh Bitwig project, then we can use some different CM plugins. Set the playback cycle points so that the whole song is included. We've chosen bars 1 to 77.

5 > In order to save the mix as a stereo audio file, go over to the File menu and select Export Audio. In the audio export window there will be options including individual tracks. We want the Master output, so select that. For the Time Range, select the Loop Region option.

6 > There are some further options including real-time bounce, pre-fader bounce and dither. As 8-Track is limited to 16-bit bounce, we'll select the dither option. To execute the bounce, select OK. Bitwig places the exported file in a date labelled folder within the project folder.







7 > To master the track, create a new project with one audio track. Set the tempo to 120bpm and from the File menu save the project in the same folder as the main project. Now open the File browser, select Current Project at the top and from the exported folder drag in the Master file.

8 > Now open the device browser and load up four Devices in this order to help the overall sound. Set the PTH2A-CM boosting 5dB at 10kHz and 3dB at 100Hz. Frontier is set to Soft Clip with an output boost of 3dB. Meanwhile EQ-5 has a 2-pole high pass at 48Hz and Tool has width 117%. These should subtly alter your overall EQ.

9 > Before exporting the mastered tune, add a fade out to shorten effects tail. Set the track fader to 0dB and adjust the track cycle for the whole track. Then head back to the Audio Export option in the File menu, select a new folder location and bounce out. You've now made a track from start to finish!

EDM

HIP-HOP

NEW COUNTRY

TRAP

BASSLINE

TECHNO

DRUM & BASS

MAKE A TRACK NOW!

We have seven workshops to help you make music in some of the most popular genres out there. All you need is this guide and the free cm Plugin Suite!

> **In this Beginner's Guide To Music Production we have already detailed how to make a piece of music with the free DAW that comes with it. By following this Bitwig Studio 8-Track workshop (see page 16), you should now be up to speed with how DAWs and plugin instruments and effects work, so now it's time to take your music productions to the next level, and home in on some specific music genres!**

In seven workshops, starting over the page, we are going to guide you through how to create a track in several popular styles, from the melodic twang of New Country to the insistent repetition of Techno. There should be a groove and a song for everyone, but don't worry if your favourite genre is not included, as even by following a workshop on an unfamiliar style, you will pick up production tips, advice and inside tricks that will help you on your music making journey.

As with a lot of the workshops in this special guide, we will be using software plugin instruments and effects from the cm Plugin Suite, and each guide will detail which ones you need to install and use (see page 15 for more on this). However, using plugins from this suite is not essential, as the DAW you use should come bundled with several instruments and effects more than up to the task in hand.

The cm Plugin Suite can be located and downloaded for free at filesilo.co.uk – full instructions are again given on page 15. At filesilo you can also download all of the audio files (samples) you need to accompany each project, some examples of how the song should sound as you progress through each tutorial, and even videos to help you through.

Each guide should give you a glimpse of some of the techniques and ideas behind a diverse set of musical styles, and by following each you will get a great grounding in music production, and hopefully able to take your own ideas and productions to new heights. Turn the page and make music now!

EDM

> Although EDM (electronic dance music) is used as a catch-all term by many in the music scene to describe dance music (particularly in America), it also refers to the kind of big room-sounding music produced and played by the likes of Skrillex, Steve Aoki and Marshmello at huge festivals like Ultra, EDC and Creamfields.

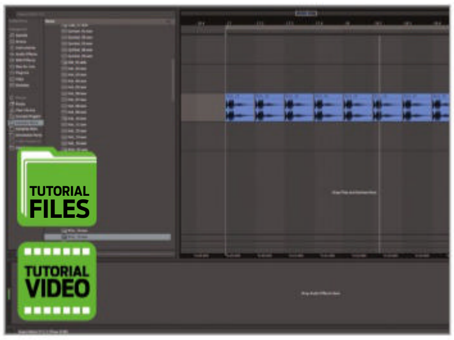
While EDM shares similarities with styles like house, including a tempo ranging from 120-130bpm and the 4/4 drum patterns often used, there's also influence from styles as diverse as dubstep, RnB and pop, clearly heard in the arrangement, synthesis and vocal production techniques used. Although EDM music is heavily pitched towards club or festival situations, the catchy hooks and huge vocal lines make it well suited to commercial radio too, with the concise arrangements of many tracks being made for exactly this purpose.

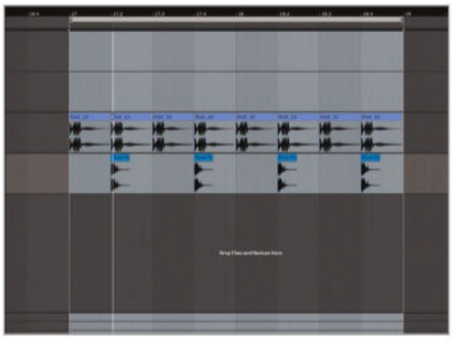
All of these elements have combined into a well-established music style that's dominating radio playlists and racking up billions of hits on YouTube and Spotify, as well as selling millions of tickets for events every year. If you're looking to start making your own EDM anthems, then we've got your back with our unmissable guide on how you can make your own EDM track for no outlay whatsoever.

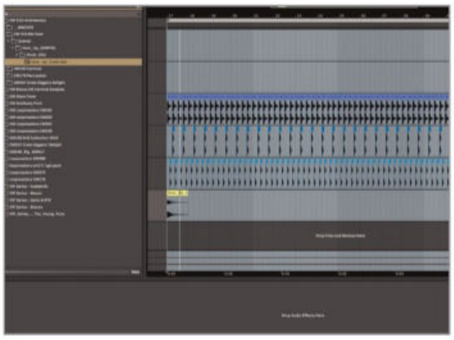
Over the next few pages, we'll run through how to create an EDM track using any DAW, the cm Plugin Suite and our sample pack, all of which you can find at Filesilo (Bookazines/The Beginners Guide To Music Production).

>Step by step

1. Making an EDM composition



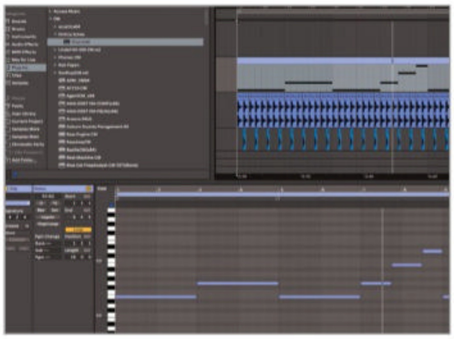


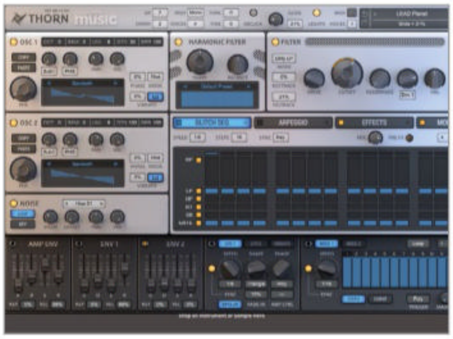


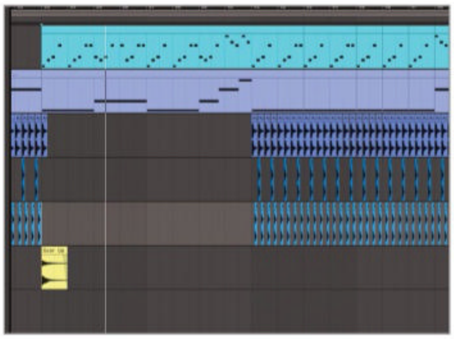
1 > Set your DAW's BPM to 128, and build a simple drum kit to lay your musical sounds over. Download the EDM Track Samples and MIDI files folder from filesilo.co.uk and get Kick_15.wav. This is a weighty, EDM-style kick that's a great building block. Reduce it to -6dB to keep your volume right, then copy the kick onto each beat over two bars.

2 > Let's add a clap into the mix. From the samples folder, import DownTown_Clap_01.wav. This is a tight-sounding clap, with a punchy attack reminiscent of a snare. Place it on the second and fourth beats of every bar then lower it to -9dB, so it sits better mixed with the kick. Next, add some percussion parts to give the drum track momentum.

3 > Import 80s_Hat_02.wav from the samples onto a new channel, and duplicate it onto every offbeat. This hat has a tight sound out of the box, ideal for our track. Lower the channel to -9dB to keep the mix balanced. Extend the arrangement to 16 bars. Add Gear_Up_Crash.wav (again from the samples), and place it at the start of the arrangement.







4 > Lower the crash volume, then apply a fade to the end of it to tidy it. Now load the Dmitry Sches' ThornCM plugin (from instruments folder at Filesilo) onto a new MIDI channel, then select the SEQ Collider preset, a great arpeggiated sequence that we can use for our intro. Import Arp.mid (from the samples folder) to trigger ThornCM, and reduce the channel volume.

5 > We'll stretch our track to a full arrangement. Copy the parts to make another 16-bar section. Add ThornCM onto a new MIDI track, with the Lead-Planet preset selected; this is a huge-sounding lead, perfect for this track. Import Lead.mid onto the channel to trigger the synth, then turn the channel down to -2dB to keep the levels in check.

6 > Delete all of the snare and hi-hat audio from the first eight bars of our second section, so that the lead takes precedence. Mute all the kicks, except for the first one that we'll turn into an effect later on. We'll begin by making a build by looping over two bars of the arpeggiator and lead during the second eight-bar section, decreasing this to one bar for the last four.

RECOMMENDED LISTENING

MARTIN GARRIX ANIMALS

MARTIN GARRIX
ANIMALS
This 2013 smash announced Martin Garrix to the world, with its slick production and arrangement accenting the unmissable lead synth line.

▶ **bit.ly/mg_anmls**

deadmau5 + Kaskade
i remember

DEADMAU5 & KASKADE
I REMEMBER
A beautiful piece of production, with warm synths and crisp perc complementing the haunting vocals perfectly. Definitely an EDM classic!

▶ **bit.ly/ddmskskd_ir**

SWEDISH HOUSE MAFIA
DON'T YOU WORRY CHILD

SWEDISH HOUSE MAFIA
FT JOHN MARTIN
DON'T YOU WORRY CHILD
Commercial music fan or not, you won't have escaped this monster, with big synths and possibly the catchiest vocal of the 10s.

▶ **bit.ly/swhm_dywc**

AVICII
LE7ELS

AVICII
LEVELS
The legacy of the late Tim Bergling (aka Avicii) as one of EDM's finest players lives on, with tracks such as *Levels* now considered to be genuine classics.

▶ **bit.ly/avc_lvls**

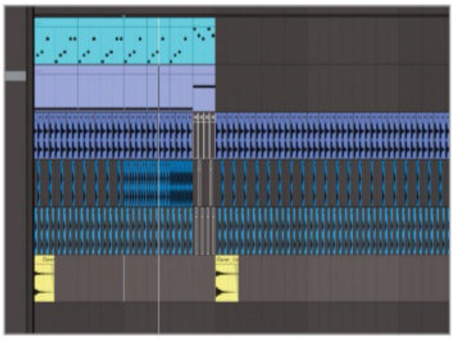
PRO TIPS

DE-ESSING BLESSING

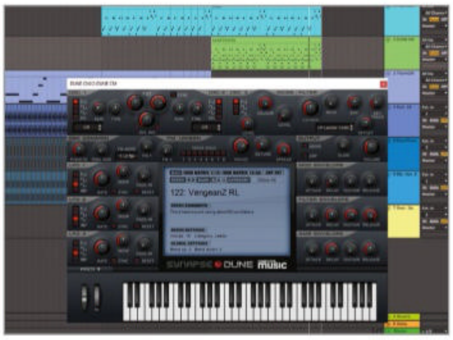
If you're using EDM-style one-shot effects or risers from the likes of Loopmasters or Vengeance, you might find that they start to add harshness to the high-mid frequencies of your mix, particularly when layered. Deal with this issue dynamically by grouping the effects, before applying de-essing. This effect, normally used for vocals, will remove the harsh high-mid frequencies only when its threshold is breached, giving a more natural sound.

SIZZLING SYNTHS

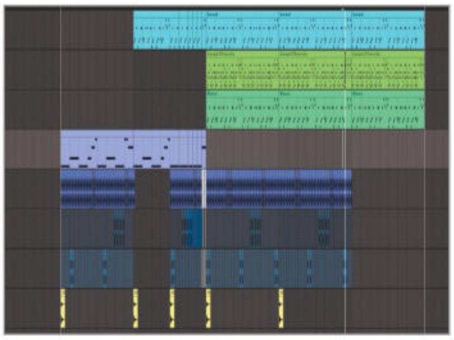
The kind of synths frequently used in EDM production have a full-range sound that, while filling the mix nicely, can cause harshness or frequency clashes in the bass and high frequency areas. Taking time to EQ these areas will give a smoother overall finish, while leaving room for the bass, kick and percussion to do their thing without unpleasant masking, giving your mix a fatiguing overall sound, particularly on a PA system.



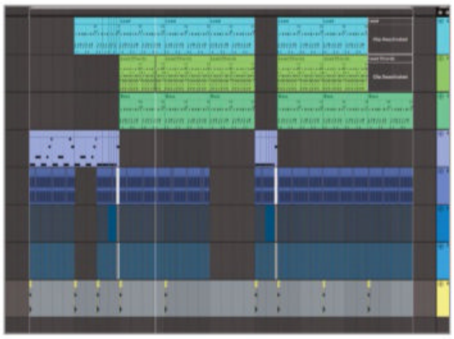
7 > Copy the crash cymbal over eight bars across, so it hits when the drums return. We'll mute the drums entirely from the last bar, giving the lead added impact before the drop. Create a clap build over the last four bars, so the clap picks up pace. Now, we'll duplicate the drums from the first 16 bars after the build section, so we can work on the drop.



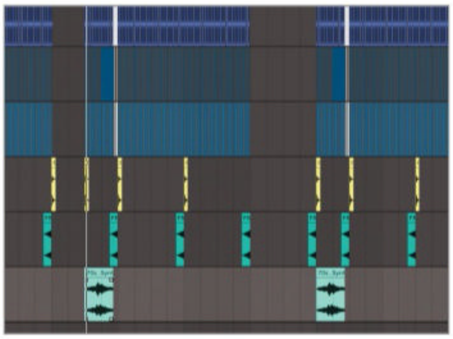
8 > Import Lead.mid onto the lead channel for our drop. Add a new MIDI track, with Synapse Audio's DuneCM loaded up. Drop Lead Chords.mid onto the track; this is a chord progression we've made to back up the lead line. Load the VengeanZ RL preset in DuneCM; a fat, unison, detuned lead to beef up the drop. Reduce volume to -7dB to keep balance.



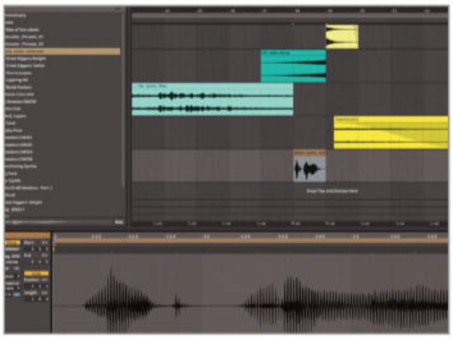
9 > A synth bass will fill out the frequencies below the lead sounds, adding weight. Add a new MIDI channel, with Bass.mid loaded onto it. Call up u-he's BazilleCM, and select the Purr Bass preset. Now, copy the entire drop section so that it's 32 bars in length. We'll duplicate the lead, chord and bass MIDI parts again to start creating the breakdown.



10 > Grab the second eight bars of our build section, and copy it across to go after the breakdown. Place a crash cymbal at the start of the breakdown, then grab the drop audio/MIDI and place it after the second build. After duplicating the last 16 bars of the second drop, mute the lead and chords MIDI to create a cooled down final 16 bars to finish the track off.



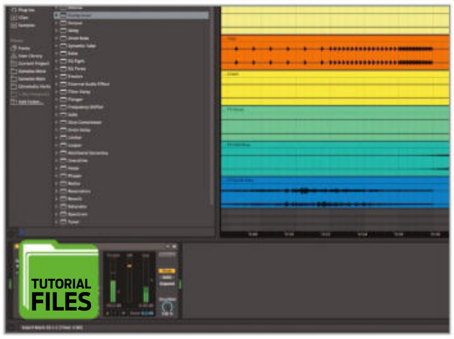
11 > Let's add effects. Import FM_Odd_Sting.wav onto a new channel, then reverse and place it at the end of each 16-bar section, making a subtle riser. Place 70s_Synth_Rise.wav from sample folder under both build sections to add atmosphere. Delete the last bar of the synth rise, then lower both effects to -3dB to preserve mix balance.



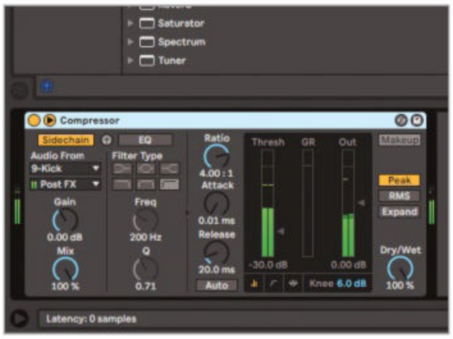
12 > A noise burst on the drop gives character. Place TapeNoise03.wav from the sample folder on the second beat of the drop. Fade out the audio, so the burst reduces to silence. To finish, add a vocal snip; grab Make_some_noise.wav and place it directly before each drop, pitched down by five semitones.

> Step by step

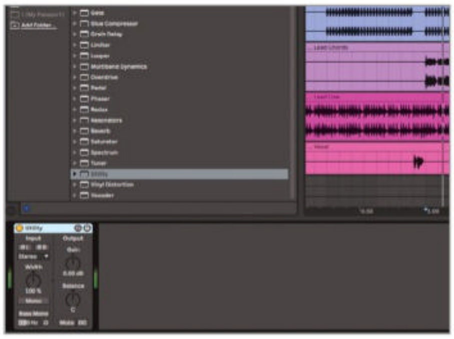
2. Sidechain gain: an EDM staple


TUTORIAL
FILES

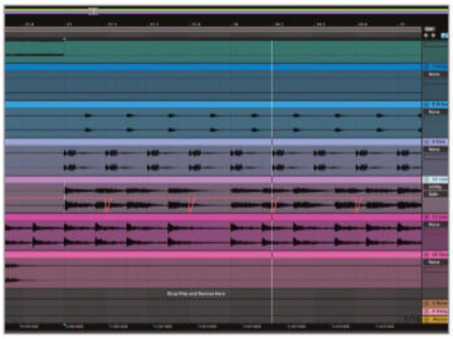
1 Sidechain compression is an integral part of EDM, so let's put it into action in our track. Start by loading a sidechain compressor onto the FX Noise channel, with the kick selected as the trigger. Reduce Attack to its fastest, then set the Threshold at -30dB to increase the effect.


Saturator
Spectrum
Tuner
Compressor
Sidechain
Audio From
9-Kick
Post FX
Gain
0.00 dB
Mix
100 %
EQ
Filter Type
Freq
200 Hz
Q
0.71
Ratio
4.00 : 1
Attack
0.01 ms
Release
20.0 ms
Auto
Thresh
GR
Out
-30.0 dB
0.00 dB
Makeup
Peak
RMS
Expand
Knee 6.0 dB
Dry/Wet
100 %
Latency: 0 samples

2 Some sidechaining helps the bass and kick gel together. Copy the plugin from the FX Noise channel to the Bass channel, then reduce the Release to 20ms, so the ducking effect ends more quickly. Increasing the Ratio to 4:1 gives a more brusque sound to the effect.



3 While sidechain compression using a dedicated plugin with sidechain input is simple and effective, sometimes it's more precise and controllable to instead program in the ducking effect using automation of a utility plugin; let's try this out for our lead chords. Add any utility plugin onto the Lead Chords channel.



4 We'll draw in automation of our volume on beats 2 and 4 of each bar, so that it ducks the lead chords when the clap hits. Copy the automation so it's on both drops. Now, when you bypass the plugin, you'll hear that the clap doesn't pop out as much.

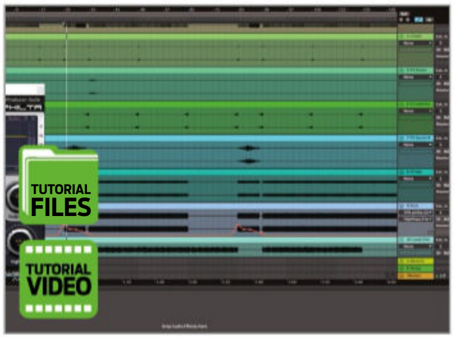
Sidechaining

A huge part of the production style of your favourite EDM anthems will be the use of sidechain compression in order to rhythmically change the volume of elements such as synths, bass or even vocals using another element in the track as the sidechain trigger. This can be particularly beneficial when producing music such as EDM that'll be later mixed and mastered to extreme levels of loudness, as dense sounds like lead synths or bass can be made to fit around the other parts of the song.

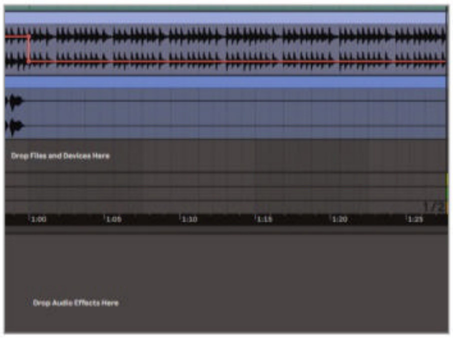
This technique will be familiar to most of us, as it's used heavily in contemporary genres ranging from house music, through to dubstep and beyond. While sidechaining is often used as a creative volume modulation technique, the main reason that sidechaining is so ubiquitous in dance production is because it's a simple way of moving one element away from another, creating extra headroom for important parts like the kick, snare or bass to take their rightful place in the mix.

> Step by step

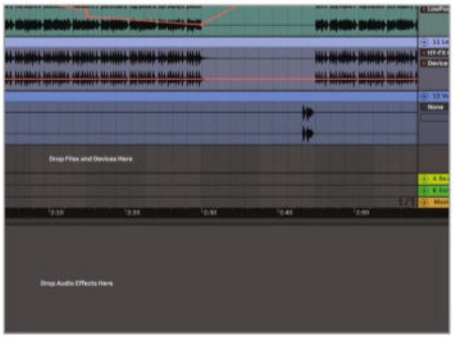
3. Automation nation


TUTORIAL
FILES
TUTORIAL
VIDEO

1 Embellish the arrangement by automating some filters. Add Vengeance's VPS PhiltaCM to the Kick channel. High-pass filter the kick using some automation for the eight-bar build prior to the drop, so the bass fades in. Copy the automation to the second build.


Drop Files and Devices Here
Drop Audio Effects Here

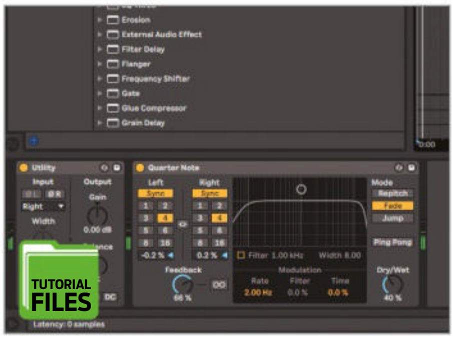
2 Adding a cool multi-effect to the lead line for the one-bar gap before the drop adds impact to the drop. Add HY-FX CM onto the channel, then select the Factory 03 preset, which adds cool filter modulation. Automate the effect so that it's bypassed except at this point.


Drop Files and Devices Here
Drop Audio Effects Here

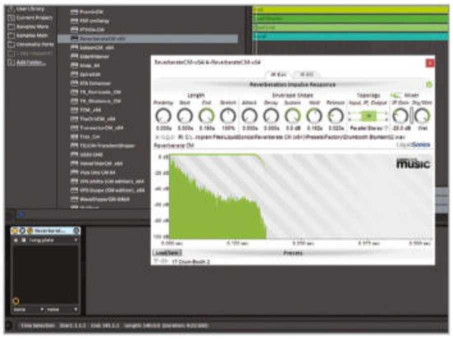
3 To finish up, filter the lead chords in the breakdown. Add VPS PhiltaCM onto the channel, then set the Slope to 48dB/octave for a sharper sound. Draw in some automation of the Low-pass frequency across the 16-bar section, so that the high frequencies fade out as the breakdown unfolds.

> Step by step

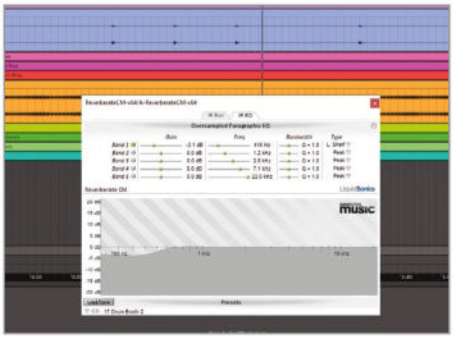
4. Mixing down your EDM track



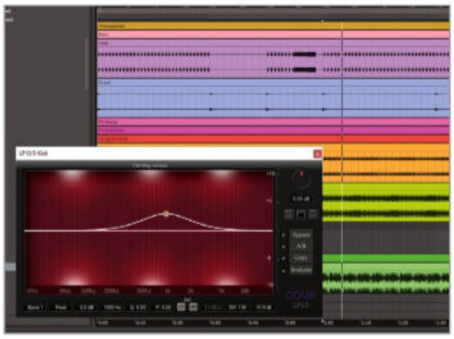
1 > Let's start with a crash. The right channel is stronger than the left, so isolate it using a utility plugin. Load the plugin, and set the channel mode to Right, turning our crash into a mono sound. Add an 1/8th note delay, with the Dry/Wet mix at 40%.



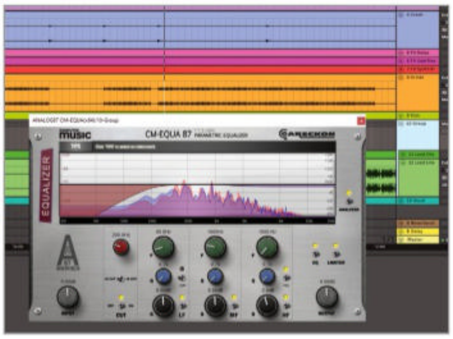
2 > The delay adds a spacious, interesting feel to the crash while adding detail to the overall arrangement. Next, add reverb to the percussion and clap. Add Liquidsonics Reverberate CM onto a return track with the Drum Booth 2 preset loaded. Set the Dry/Wet control to full wet.



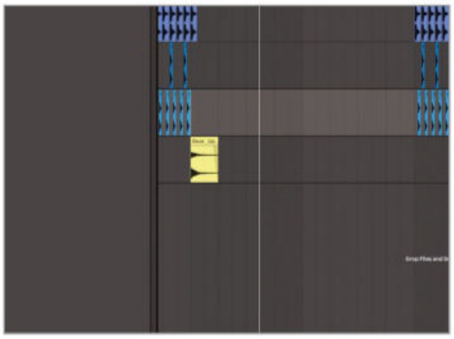
3 > Dial in some -6dB sends from the clap, crash and hi-hat to the reverb return track. You'll hear that the reverb is quite short, adding reflections without swamping the mix. Use Reverberate CM's low-shelf filter to make a -3dB cut at 400Hz, increasing low frequency clarity.



4 > Next, we'll add an EQ boost to the kick, so it cuts through the mix better. Load DDMF's LP10 CM onto the channel, and dial in a 3dB peak boost at 1kHz; you'll hear the kick poke through the mix. Now, group the lead chords and lead line.



5 > Add Eareckon's excellent CM-EQUA 87 to the lead group, and set the low-cut filter to 200Hz to make room for the kick and bass. A -2dB high shelf HF cut at 1.5kHz will dull the natural sharpness of the synths, making extra space for the percussion to shine.



6 > To finish, we'll use limiting to rein in our spiky lead line. Add ToneBoosters' Barricade CM to the channel, then set the Out ceiling to -5dB to get around 3dB of peak gain reduction. You'll hear the synth instantly gel with the mix, with extra room for the percussion.

Simplicity is key

Ever wondered why EDM tracks sound so massive? The answer is (literally) simplicity itself. Unlike styles like drum & bass that are constructed from painstakingly-layered drum, bass and lead sounds, EDM is constructed using bigger sounds, but fewer of them. This means that each sound has more room in the mix, and there's also more room for the trademark effects such as reverb and delay that are coated all over EDM sounds.

So, if you're feeling like your track isn't sounding big enough, what can be done? Firstly, we'd recommend selecting naturally bigger sounds as a starting point. While a subtle layer or processing can give the desired effect, you'll find that elaborately constructed layered kicks, snares and basses won't sound as powerful in comparison to naturally big sounds.

078: Princess Gracious LE
SYNAPSE DUNE
music

For big EDM sounds, keep things simple

Equally, while a bit of distortion or similar will beef up your synths, it's always worth looking at applying a bit of unison detuning or similar in the synth itself for a naturally huge sound.

POWER TIP

> For reference...

When you reference your EDM tune in mono, you may find that those huge synths sound weak due to phase cancellation, leading to an EDM track that lacks power when played back on festival/club PA systems, FM radio or even your iPhone. In this situation, use a mid/side plugin such as Voxengo's fab freebie MSED, which splits the stereo left/right signal into its mono and stereo spread components, to boost the volume of the mid (mono) channel accordingly, adding mono weight without compromising on stereo width.

Hip-Hop

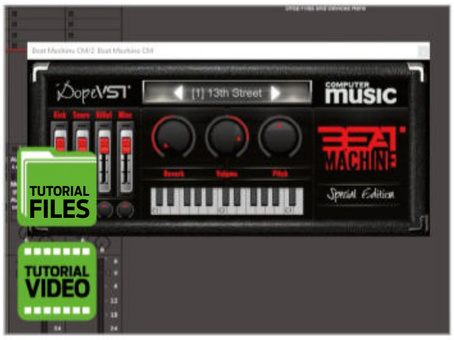
Originally a product of block parties thrown by pioneers such as Kool Herc, the Black Spades and Grandmaster Flash in 1970s New York, hip-hop became a cultural and musical phenomenon worldwide during the 1980s and 90s. To start with, hip-hop music was created live at parties by the process of cutting together two copies of the same breakbeat record using turntables and a DJ mixer, making a danceable beat out of a short loop. Rappers would then add their lyrics over the music, telling stories while getting the crowd involved through toasting and shout-outs.

Hip-hop quickly caught on, and it didn't take long for artists to start creating this music in the studio, using early sampling equipment from the likes of Akai or E-mu to take breakbeat or instrumental sections of other records from a multitude of genres, and make them into a new composition, often with additionally layered synths or drum machines in the mix. The increasing affordability of sampling and sequencing gear during this period made hip-hop production accessible to a wide audience, and continues to today.

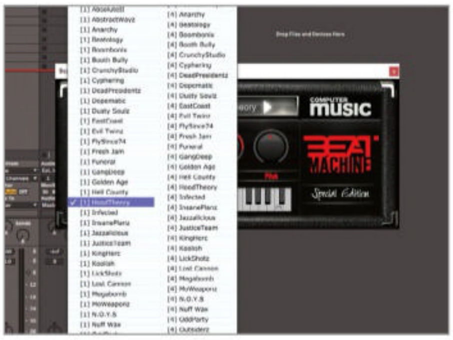
In the spirit of hip-hop's DIY aesthetic, and attitude to sampling, we're going to show you how to make an authentic hip-hop track using just a DAW/sequencer, our legendary **cm** software suite and the samples at filesilo.co.uk (under the Bookazines/Beginners Guide To Music Production). We'll be using Ableton Live 10 for this, but you can use any DAW.

>Step by step

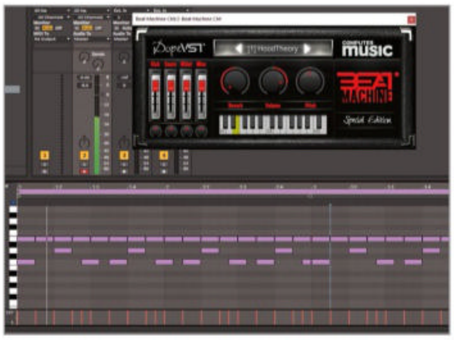
1. Beat-making and arranging



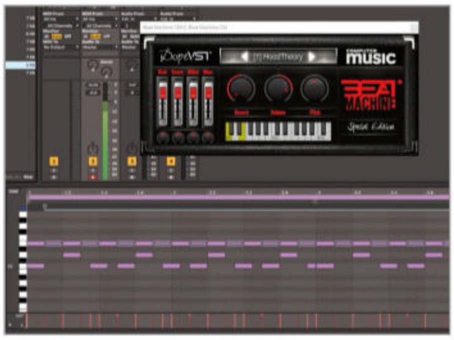
1 Let's start our hip-hop endeavours by creating a neck-snapping, boom bap beat using DopeVST's exceptional Beat Machine CM – you can find this in the instruments folder at FileSilo. First set your DAW's BPM to 90 and load Beat Machine CM onto a blank MIDI track. Turn down the MIDI channel's volume to around -6dB.



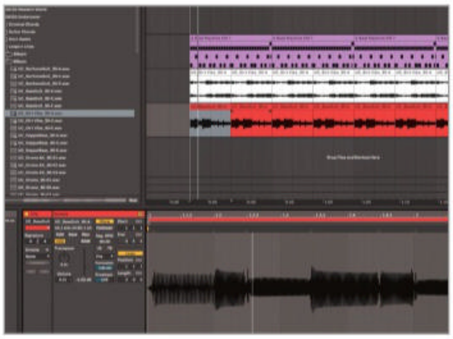
2 Beat Machine CM has 50 superb drum kits under the hood, so spend a little time auditioning them until you find one you like; we've plumped for the Hood Theory kit, which has a grimy yet snappy sound reminiscent of golden era hip-hop beats from Pete Rock, Trackmasters or DJ Premier. Now let's start laying down some drum patterns.



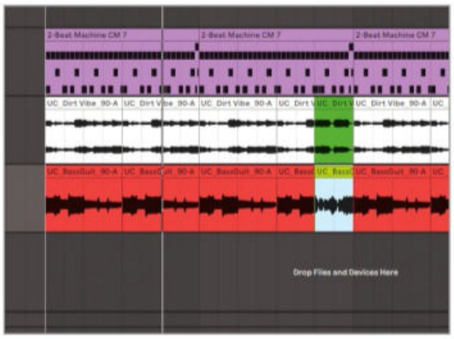
3 How you lay down your drums is your choice; either program them directly onto the MIDI piano roll, or record them in using a MIDI controller of your choice – we'll program a four bar kick, snare and hat combo in. The pattern sounds great, but is a bit too rigidly quantised right now, so let's add some groove for that authentically wonky hip-hop sound.



4 Some DAWs have 'swing templates' that you can apply to beats and melodies, adding a human feel to the timing. If you use Ableton Live, the NY Cut 1 template adds swagger to the drums; reducing the velocity of the offbeat hi-hats further humanises our beat. Don't worry if your DAW does not have these!



5 After stretching our drums out into a 16-bar loop, add samples from the BGTMP folder at filesilo.co.uk (Hip Hop folder). Import UC_DirtVibe_90-A.wav and UC_BassGuit_90-A.wav. These consist of a grungy vibraphone riff, with a chunky bass guitar, both in the key of A. Reducing both volumes by around -5dB.



6 Use alternate loops of our instruments in a different key to make variations of our main loop. Import UC_DirtVibe_90-C.wav and UC_BassGuit_90-C.wav, and place them on the last bar of every eight-bar section using the same volume and warp settings as before. Now that we've got a 16-bar section with extra flourishes, we can flesh it out into a full track.

RECOMMENDED LISTENING

BOYZ N THE HOOD

EAZY-E
BOYZ IN THE HOOD
Eazy-E's laidback vocal style, with Dr Dre and Yella production. 808 drums are complemented by a piercing synth lead and extra scratches.

▶ **bit.ly/eze_bith**

NAS
N.Y. STATE OF MIND
This track featured the legendary DJ Premier on the buttons, sampling Joe Chambers and Rakim over a Kool & The Gang breakbeat.

▶ **bit.ly/ns_nysom**

MOBB DEEP
SHOOK ONES
Mobb Deep's classic, featuring clever manipulation of a sampled Herbie Hancock piano riff alongside sparse beats – and that killer first verse from Prodigy.

▶ **bit.ly/md_shkns**

the notorious
JUICY

THE NOTORIOUS B.I.G.
JUICY
Produced by Poke and Puff Daddy, the laidback vibe of the Mtume sample nicely pairs with Biggie's effortless lyrics.

▶ **bit.ly/ntrsbg_jcy**

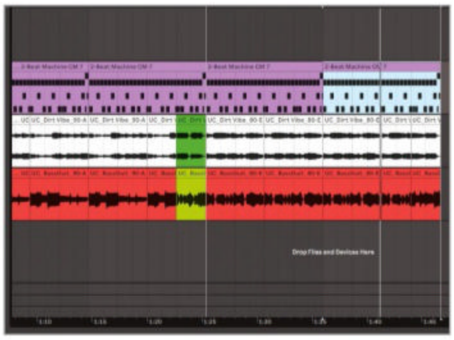
PRO TIPS

TIMING IS KEY

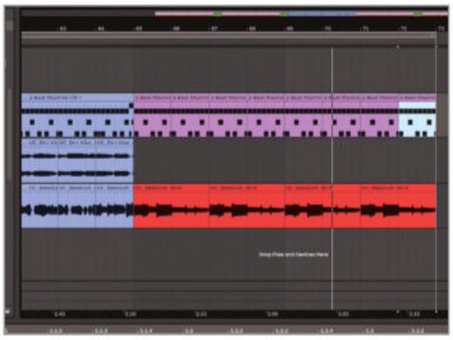
What gives hip-hop its authentic feel is the lack of rigid quantisation, particularly when making drums. While the track has to sound together syncopation-wise, don't be afraid to place things slightly ahead, or behind the grid if it sounds good. For example, moving percussion such as hi-hats or rides slightly ahead of the grid gives an urgent feel to the rhythm track, while moving behind gives a laidback feel.

SAMPLETASTIC

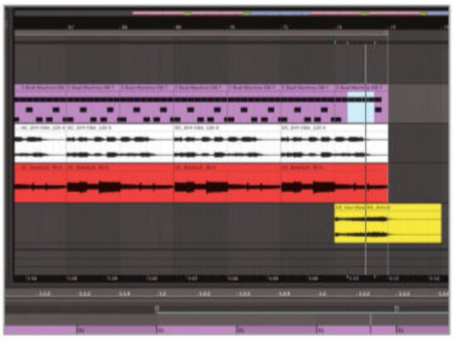
One of the most fun things about hip-hop is finding cool and unusual samples, then creating something of your own from them. Our supplied samples from filesilo.co.uk have enough authentic-sounding sounds to get you going, but there are other options including sample packs from the likes of Equipped Music, or Arcade's Output loop synthesiser. This lets you manipulate royalty free, old school samples in tonnes of ways to make them your own.



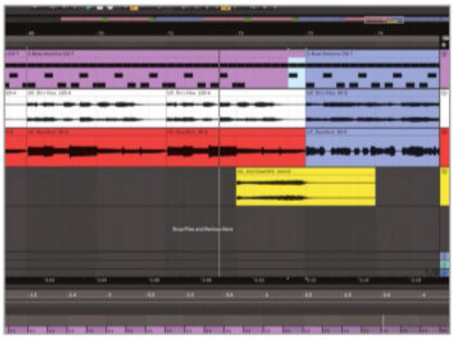
7 > The section created will be our verse, so let's make a hook to follow. Copy an eight-bar section of drums after the verse, load UC_DirtVibe_80-E.wav to the vibe riff channel, with UC_DirtVibe_80-A.wav as a one-bar fill at the end. Load UC_BassGuit_80-E.wav for the bass, with UC_BassGuit_80-A.wav to complement the one bar vibe fill at the end.



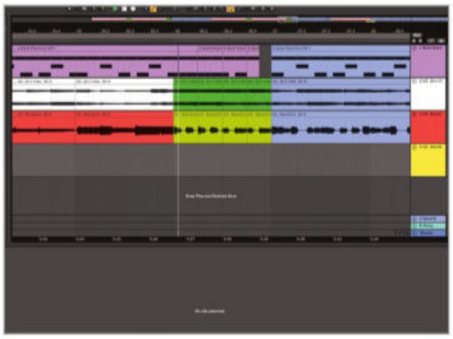
8 > The bass fill at the end of the hook section sounds slightly loose, so we'll use Live's warping to quantise the last three notes. The bass fill syncopates with the drums more tightly now. Add a second verse to the arrangement by duplicating the verse section and placing it after the eight-bar hook. Copy the hook section, and paste it so it repeats after verse 2.



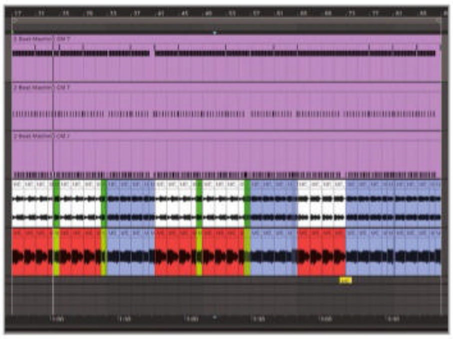
9 > An eight-bar bridge section changes the vibe of the track, before ending the arrangement on a 16-bar double hook. Copy the first bar of our drum loop, and duplicate it eight times. Using one bar of the drum pattern only for the bridge gives a different feel compared to the rest of the track. We'll use the main bass loop from the verse for the bridge as well.



10 > To create an interesting bridge, we'll grab UC_DirtVibe_120-A.wav, and duplicate it across the entire bridge section. Add a classic-sounding horn swell to the end by importing UC_HornSwellAlt_Amin9.wav, and placing it on the last bar. Muting the first snare, last hat and kicks after beat 1 creates a nifty drum edit to accent the horn further.



11 > To complete our arrangement, copy the eight-bar hook section twice directly after the bridge. This makes our track just over three minutes in total – ideal for a rapper or vocalist to work with. Adding some extra drum and sample edits at the end of each of the eight bars of verse and hook gives the distinctive, chopped-up sound hip-hop is famous for.



12 > Focus on the drum mix now. Bring all the drum MIDI clips into one. We can now duplicate the drum machine MIDI channel twice, and mute the appropriate MIDI notes so that the kick is playing from one, the snare from another and the hats from the third. You can now process each drum part separately; turning the hi-hat volume down by 1dB gives balance.

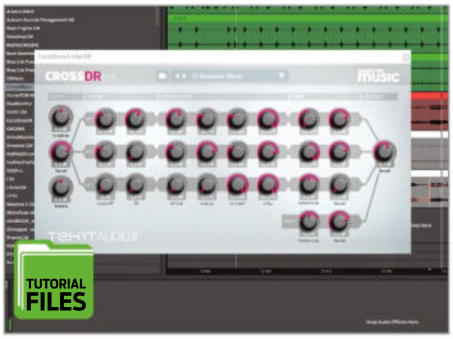
Arrangement antics

How you arrange a track makes all the difference to how it flows, and how it makes the listener feel too, particularly with sample-based music like classic hip-hop. A simple example of arrangement magic is Daft Punk and Pharrell's 2013 hit *Get Lucky*; by trimming the six-minute album mix to a more concise four, the most striking parts of the song were given greater focus, creating a monster.

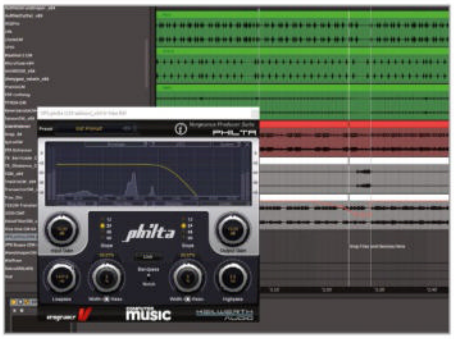
So, how can you make your arrangements stand out? A great starting place is to analyse the arrangement of songs from your favourite artists. You can do this by placing the file in your DAW, and using markers to map out the different sections. Or, if you're more of a visual person, try drawing the arrangement of your favourite song on paper as a diagram. Going through this exercise will teach you how the professionals do it, while giving you fresh ideas to spice up your own arrangements.

> Step by step

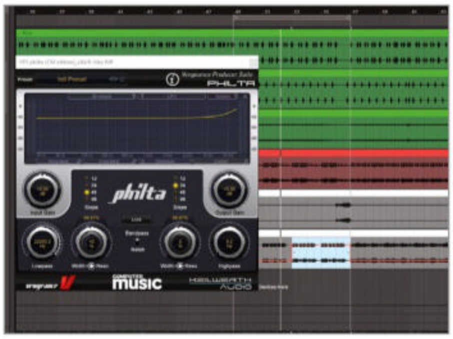
2. Adding some effects



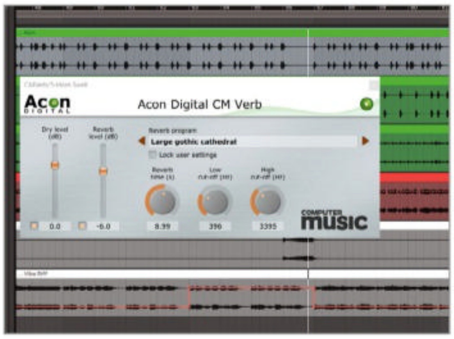
1 > Some effects processing will make the bridge section more unique. We'll use CrossDr CM (from the Effects at Filesilo) to change the tone of our vibe riff for the last two bars. Load up the plugin, and select the Basslane Warp preset. Automate the plugin bypass, so it only affects the last two bars.



2 > Turn CrossDr CM's output level down to -17dB, so that the effect is slightly quieter than the dry signal, and emphasising the horn swell. We'll use Vengeance's VPS Philta next, to filter some low frequencies from the riff. Add the plugin, then draw in some automation of the Lowpass filter's frequency.



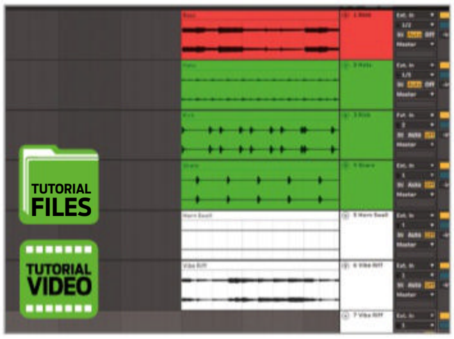
3 > Adjust the Lowpass filter's Slope to 48dB/octave, so that the effect is more pronounced. Increasing the resonance to 10% gives the effect a more ringy tone that stands out from the dry riff. Again, we'll automate the filter's bypass so that it doesn't affect the rest of the track.



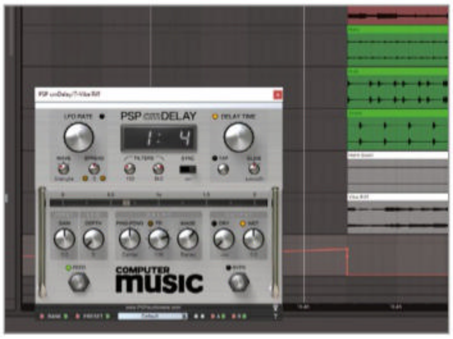
4 > To finish, we'll add lush reverb to the horn swell. Call up Acon Digital's CM Verb, with the Large Gothic Cathedral program loaded. Push the reverb time to nine seconds to make the tail longer, with the low cut-off set at 400Hz to reduce unwanted low frequency muddiness.

> Step by step

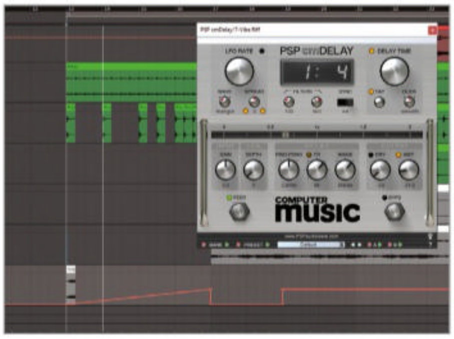
3. Setting the scene with a unique four-bar intro



1 > A four-bar introduction will not only give any potential vocalist a cue to drop in for the verse, but also gives the verse context in its own right. Cut a beat of the vibe riff, and place it on a new audio channel four bars before the track starts.



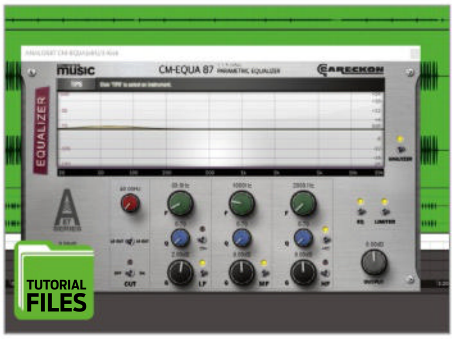
2 > Reverse the audio slice, then place PSP's CM Delay on the channel. Kill the Dry signal, so we just hear the wet effect. Turn on the delay's Sync, and set Delay Time to ¼ of a beat. Automating the Feedback level up to 100 makes our delay tail get gradually stronger.



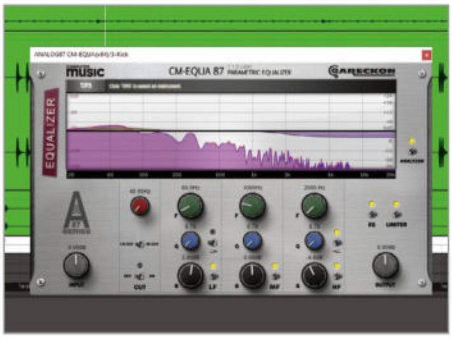
3 > We'll automate the Wet level now, so that the delay fades in from silence across the four-bar intro, before cutting abruptly when the verse comes in. To fill the dead space, take a section of the verse drums and create a simple drum pattern that leads into the verse.

> Step by step

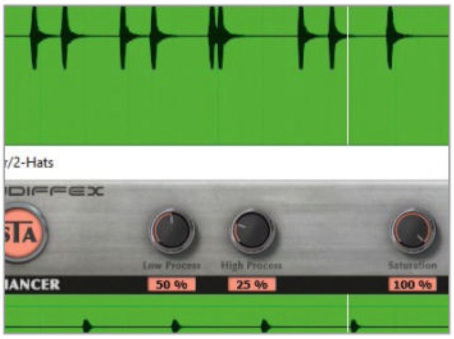
4. Drum mixing – adding beef to a kick


EQUALIZER
CM-EQUA 87
EARECKON
TUTORIAL FILES

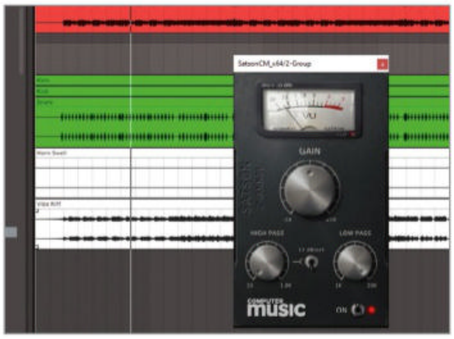
1 > Although the drums sound great right now, we can apply processing to sculpt their sound to our taste, enhancing the sound of the finished drum kit. Start by adding Eareckon's CM-EQUA 87 EQ to the Kick channel. Disable the high-pass filter, and add a 2dB LF boost at 60Hz.


EQUALIZER
CM-EQUA 87
EARECKON

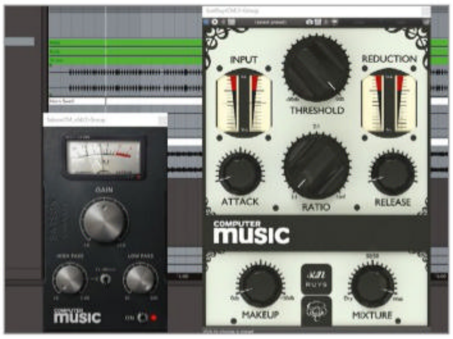
2 > Adding this EQ boost fills the low end by giving the kick more of a low-frequency thump, without it swamping the bass. Applying a -4dB HF shelf cut from 2kHz upwards gives our kick a lo-fi, warm sound that complements the track nicely. Next, let's process our hi-hats.


/2-Hats
UDIFFEX
STA
ANCER
Low Process
High Process
Saturation
50 %
25 %
100 %

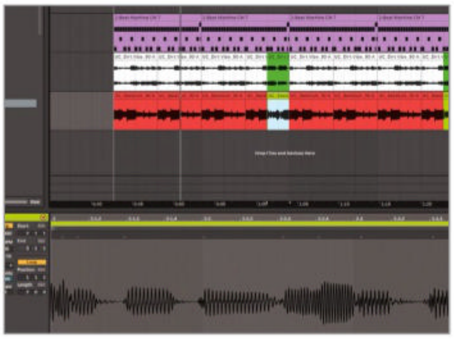
3 > Load up Audiffex's STA Enhancer onto the Hats channel; this is a modelled tube amplifier that we can use to grunge up our hats nicely. Setting the Low Process to 50%, and High Process to 25% adds depth and sharpness to our hi-hat track, with 100% saturation adding crunch.


GAIN
HIGH PASS
LOW PASS
COMPUTER MUSIC
ON

4 > As STA Enhancer has no on-board gain adjustment, turn down the hi-hat channel to -5dB to keep the levels in check. Now, group the three drum parts together into one bus so we can process the drums as one entity. Start by adding Sonimus Satson CM onto our drums bus.


INPUT
REDUCTION
THRESHOLD
ATTACK
RATIO
RELEASE
COMPUTER MUSIC
MAKEUP
MIXTURE

5 > Satson CM is a saturation plugin modelled on an SSL preamp; if you bypass it, you'll hear the difference it makes in adding analogue vibes, whilst subtly gluing our drums together. We can add some extra punch to our drum bus by dialling in a little compression using audioD3CK's SunRuysCM.



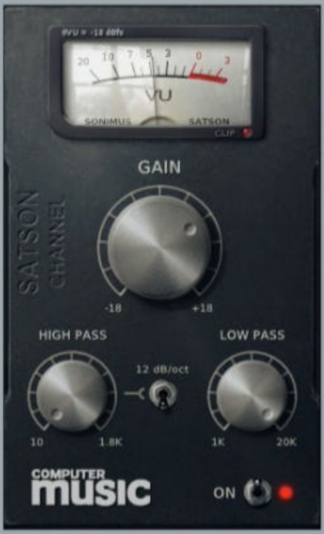
6 > Set the Ratio to 4:1, with attack and release times of around 20% to let part of the transients through, while releasing the effect quickly. A Threshold of -16dB gives us roughly 4dB of gain reduction, while applying 1.5dB of make up gain matches the wet and dry levels.

Drum mixing

Achieving a powerful, authentic-sounding drum mix when making hip-hop is not only important for making your track sound true to the genre, but is also loads of fun. While most electronic styles demand a more clinical touch when mixing, to achieve the desired end result, hip-hop allows more room for experimentation.

So adding low mid thickness to hi-hats and perc using EQ can give the drum track a chunky, full sound while adding prominence to any background noise present in the drum samples. Using narrow EQ bell boosts to accent the fundamental frequency of kick or snare hits is another good way of adding power, and a hyped tone, to your beat.

Driving your drums through saturation can also really help to give your mix added character. You can add subtle saturation to the drums as a whole bus to glue them together, or drive individual hits harder through some tape saturation to add a fizzy, distorted edge to them.


0VU = -18 dBFS
20
10
7
5
3
0
3
VU
SONIMUS
SATSON
CLIP
GAIN
SATSON CHANNEL
-18
+18
HIGH PASS
LOW PASS
12 dB/oct
10
1.8K
1K
20K
COMPUTER MUSIC
ON

POWER TIP

> Authentic tone

As most classic hip-hop was made using whatever studio gear and samples the artist could get their hands on at the time, the imperfections and limitations of that contributed in part to the tone of the finished record. We can recreate this feel in our DAW using a number of techniques. Layering subtle vinyl surface noise behind clean sampled loops can make them sound more retro, while plugins like TAL's Sampler or Inphonik's RX950 emulate the functionality and tone of classic hardware sampling kits from Akai and E-MU.

NEW COUNTRY

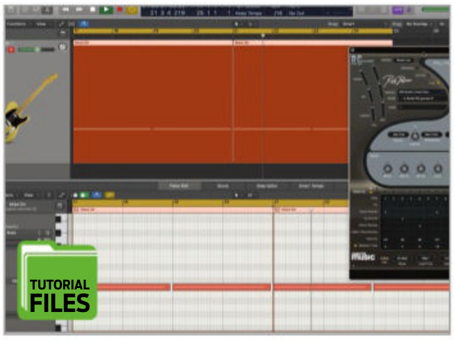
> If the phrase 'country music' instantly conjures up images of pickup trucks, good ol' boys and songs about divorce for you, there's now good cause for that opinion to be revised. Modern country music has shed whatever twangy, downbeat image it may have once had and been dragged bang up to date. High production values and levels of musicianship have always been key, blending guitars, piano, bass and drums with traditional country flavours such as banjo, lap, pedal steel and acoustic guitars, but country no longer shies away from modern production tropes like loops, drum machines and synths. What's also notable is that the importance of the quality of the song remains at the core of everything, and strong chorus melodies and stacked harmonies, often in three-part, are stock in trade in this genre.

New country – thanks in part to the TV show *Nashville* – now has a huge audience. Just check out *10,000 Hours* by Dan & Shay (with Justin Bieber), or Lil Nas X's *Old Town Road* – a smash hit fusion of hip-hop and country featuring Billy Ray Cyrus (Miley's pa), propelled to prominence by teen-friendly social media app TikTok.

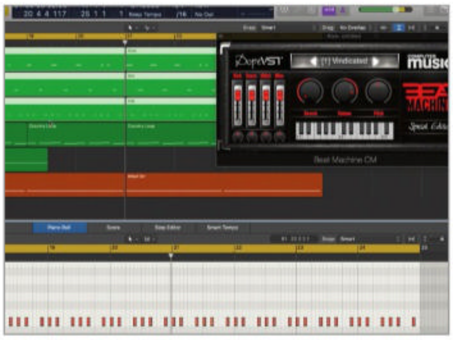
If country floats your boat, and you fancy giving it a try, all you need are the supplied samples and a few choice selections from the famous **cm** Plugin Suite from The Beginners Guide To Music Production folder (under Bookazines) at FileSilo.co.uk. We've used Logic Pro X, but the tutorial should be relevant whatever DAW you're using.

>Step by step

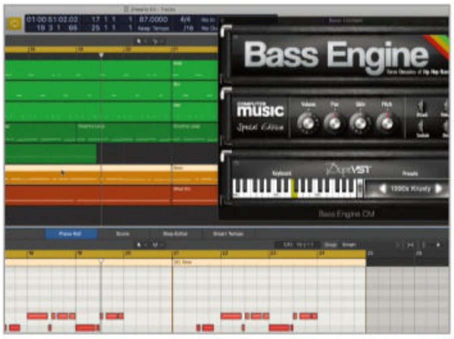
1. Creating the backing track



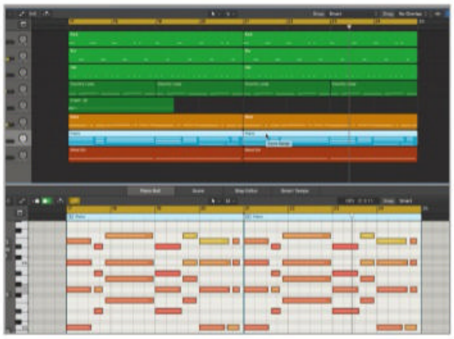
1 > Set the tempo to 87bpm. Create an instrument track, load an instance of Rob Papen RG-Muted CM and the 009 Muted-L DownTown preset. It's a muted electric guitar part, a banjo picking motif, that pedals on a single C note throughout the song. Begin programming our chorus section with an eight-bar region of four two-bar notes, starting at bar 17.



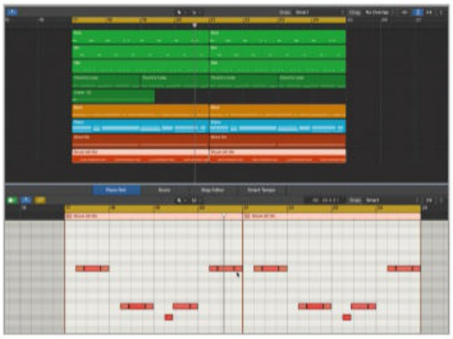
2 > Add drums from DopeVST's Beat Machine CM Vindicated preset, with a separate track for kick, snare and hat. Mix these with the Country Loop.wav sample, a specially sliced, reprogrammed and processed loop that adds a live feel to the drums. Finish off by inserting the Crash.wav crash symbol on a new audio track on the downbeat of our eight-bar section.



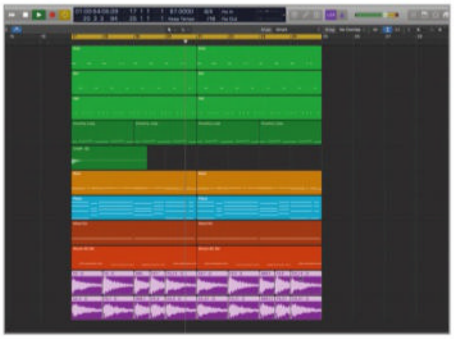
3 > Time for bass! Load up Dope VST's Bass Engine CM and select the 1990s Krusty preset, a good, weighty sustained bass sound. Import the MIDI file Country Bass.mid, or program the part shown above yourself by recording it in from a MIDI keyboard. An audio file version, Bass.wav is also provided if you'd rather just import this.



4 > There's no readily available piano instrument in the Suite, but most DAWs ship with their own version of a grand piano. Here we've got some basic C major, E♭ major and F major chords, played with Modartt's Pianoteq plugin. You can use your own piano instrument to recreate the chords shown. Import Piano.mid, or just use the Piano.wav file.



5 > Acoustic guitar is a key ingredient. We can add it by using some sampled strums covering the piano chord changes and arranged rhythmically so that the parts don't fight each other – important as they occupy very similar frequency ranges. You'll find the strum samples at filesilo.co.uk, or you can just import the audio file AC Gtr CH.wav.



6 > Stereo electric guitar strums hold down the chord changes during our chorus section. We've provided two sets of clean electric guitar chords at FileSilo, courtesy of Groove Criminals – you can either drag them onto two separate tracks, panned left and right, and arrange them as shown, or just drag in the provided audio file, E Gtr Stereo.wav.

RECOMMENDED LISTENING

SPEECHLESS
DAN + SHAY

DAN & SHAY
SPEECHLESS
A brilliant song and great production that, despite featuring a traditional band lineup, still manages to sound thoroughly modern.

▶ **bit.ly/dns_spchlss**

SOMEBODY LIKE THAT

TENILLE ARTS
SOMEBODY LIKE THAT
This country-pop radio smash is a great example of the kind of big, singalong choruses and feel-good, optimistic lyrics that are typical of the genre.

▶ **bit.ly/ta_slt**

CAITLYN SMITH
DAMN YOU FOR BREAKING MY HEART
Tradition meets modern production with drum machines and synths, heartfelt lyrics and big chorus harmonies.

▶ **bit.ly/cs_dyfbmh**

Tiera
WAKE UP CALL

TIERA
WAKE UP CALL
Programmed drums and synths mixed with guitars and organ provide the backing for a soulful country pop vocal from this up-and-coming artist.

▶ **bit.ly/trr_wuc**

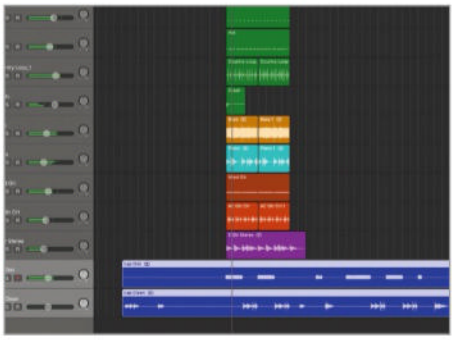
PRO TIPS

COMPRESS TO IMPRESS

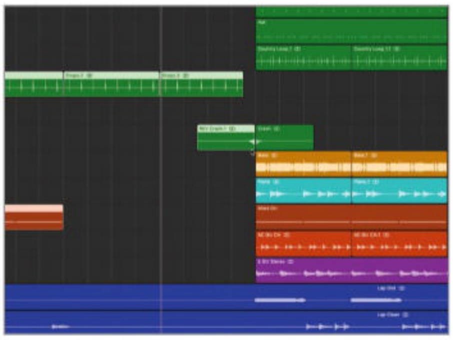
While programming, it's a good idea to add compression and maybe EQ to each track as you go along. This will help define the sound of each part as you add it, bringing out the detail in any loops you're using and helping you to balance things into the working mix more quickly as you progress. It'll also help speed things up when you come to mix the track later on.

KEY ISSUES

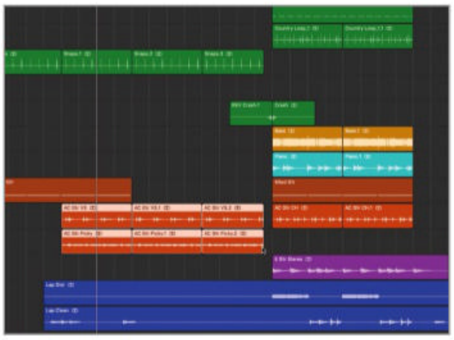
Our song is primarily in the key of C major – a decision based on the key of the vocal samples we'll be using – but because our guitar samples only offer a choice of major chords, we've chosen to 'borrow' a chord from outside the key. The chords we're using are C major, F major, G major and the borrowed E♭ major, the only one that doesn't belong to the key of C major.



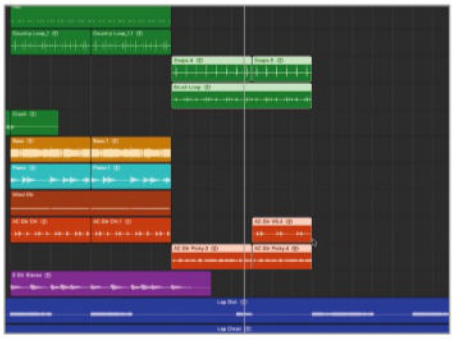
7 > Lap steel is another essential flavour, and we've sourced these excellent samples from Cyclick. We've used one distorted and one clean sound that trade places in the chorus section and add country flavour to the verses and mid section. We've arranged them for you, so simply drag the audio files Lap Dist.wav and Lap Clean.wav onto bar 4.



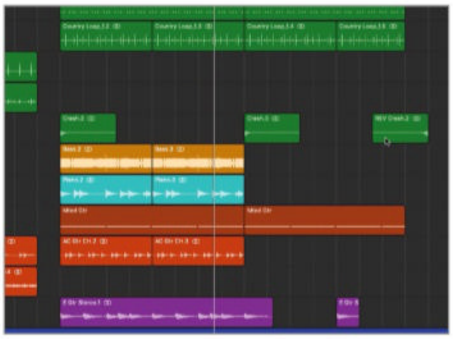
8 > For the intro and verse sections of the song, copy and paste the muted guitar part into the first eight bars, then import the file Snaps.wav – a four-bar finger snap sample – and paste it into the first 16 bars, missing out the very last beat. In its place, add a reversed version of the crash cymbal sample (used before) in bar 16 to usher in the chorus.



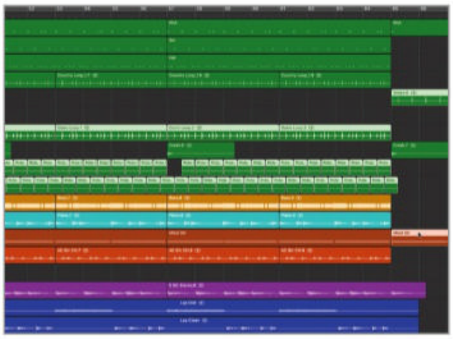
9 > We have a different acoustic part for the intro and verse, named AC Gtr VS.wav – either drag this in to fill bars 5-17 (you'll need three regions) or assemble your own from the samples provided. Drag the picky acoustic guitar part AC Gtr Picky.wav into the same 12-bar section. On the last repeat, cut off the last two beats of both parts where the reverse cymbal falls.



10 > For verse 2, drag Brush Loop.wav – a brushed drum loop – into place between bars 25-31, and double it with the finger snaps and strummed acoustic and picky guitar parts from verse 1. Remove the strummed acoustic from the first half of the verse (bars 25-29) and trim back the end of the regions to leave bar 32 completely blank.



11 > Copy and paste a double chorus at bar 33, then delete the bass, piano and strummed acoustic parts between bars 41-49 to create a mid section breakdown. Place a single, clean electric guitar C major chord at bar 45, then trim everything back to create a one-bar blank space at bar 48. Fill this space with the reverse cymbal copied from bar 16.

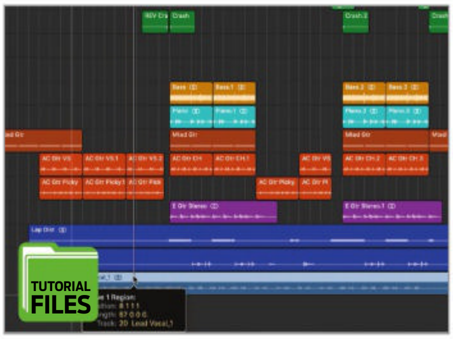


12 > Copy and paste a double outro chorus at bar 49, then add some drums – the compressed Outro Loop.wav and the ride cymbal sample Ride.wav. Place this on every quarter note beat (except where there's a crash cymbal), alternating between two tracks. Finally, copy four bars of the intro muted guitar and finger snaps to make an ending.

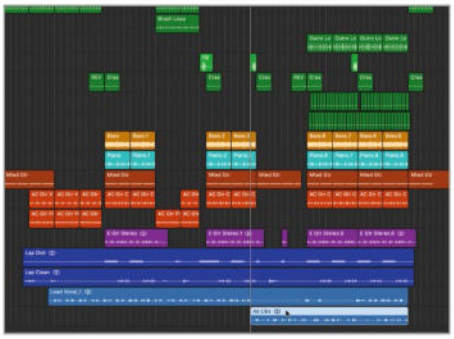
Steel yourself

The slide steel guitar, whether it be the pedal or lap variety, is an integral part of the country sound, the merest hint of it instantly transforming any regular rock or pop track into something that sounds like it came straight outta Nashville. We've used samples for our demo track, but there are one or two steel guitar VSTs on the market, so if you're serious about exploring the genre to its fullest, it might be worth investing in a plugin in order to inject that necessary country flavour. For example, as well as a raft of acoustic guitar sample libraries that might also prove useful, Orange Tree Samples offer a Slide Lap Steel library for Kontakt that provides a switchable pitch-bend mode for realistic slide effects. Meanwhile, Impact Soundworks' Pedal Steel Kontakt instrument offers a Poly Legato mode, auto vibrato and real-time harmony voice generation for a very convincing result.

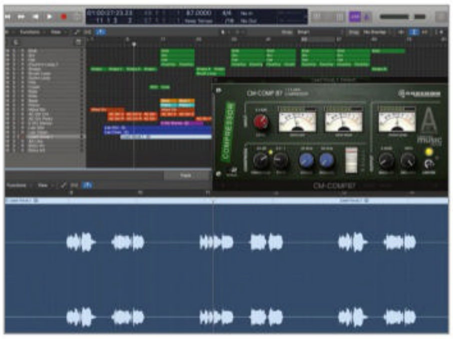
> Step by step
2. Adding vocals and harmonies



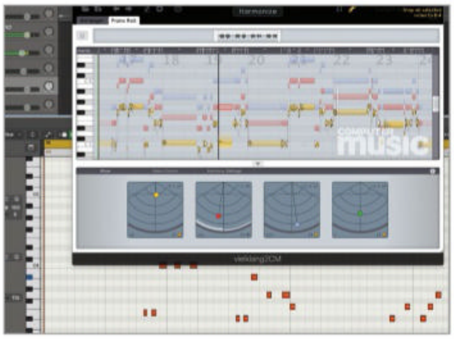
1 > For our vocal, we've used the samples that you can also get at filesilo.co.uk (Bookazines/Beginners Guide To Music Production). The first is a lead produced by chopping the original up into phrases and repeating the verse lyrics (there wasn't enough for a full song). Import Lead Vocal.wav at bar 8.



2 > You'll also find a separate track of ad libs – spontaneous phrases made up on the spot to inject variety and excitement. We sliced up the original track into chunks and moved it around so that the arrangement flows nicely through the mid section and outro choruses. Import Ad Libs.wav onto an audio track at bar 40.

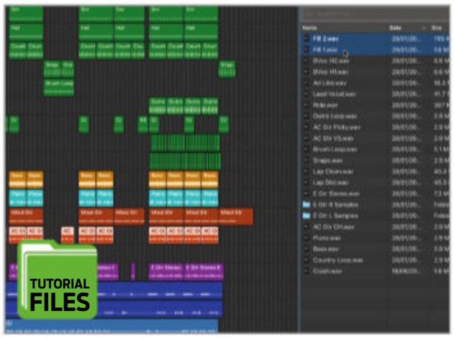


3 > Vocals tend to have a large dynamic range. This is where compression comes in, helping to even out the level and make it easier to sit the vocal in the mix. We use eaReckon's CM-COMP87 for this, with the settings shown above, to lift the level of the overall vocal without the loud bits sticking out too much.

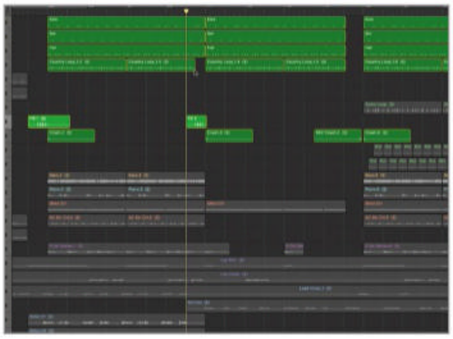


4 > Country is all about big choruses, so we've taken the lead vocal part and imported it into zplane's Vielklang2CM harmony generator. Generating the correct harmonies with this takes more than we have space to describe, so we've created audio files. Insert BVoc H1.wav and BVoc H2.wav at bars 32 and 56.

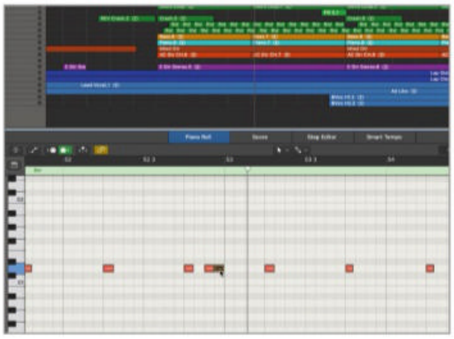
> Step by step
3. Programming fills



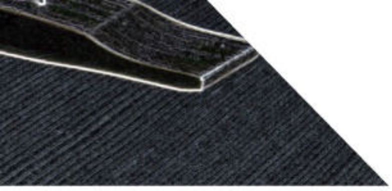
1 > There are two different methods we can use to build a few drum fills into the rhythm track to step up the energy from the mid point onwards. The first involves inserting a specially prepared sampled share fill that we've provided. There are two versions of this, named Fill 1.wav and Fill 2.wav.



2 > The fill audio regions are one-bar long, so they need to be placed one bar before the drop they precede. We've put Fill 1 – the one with the tom hit – at bar 32 and Fill 2 at bars 40 and 56. For the fill at bar 40, we've removed the country loop for the duration of the fill to avoid too many snares clashing together.

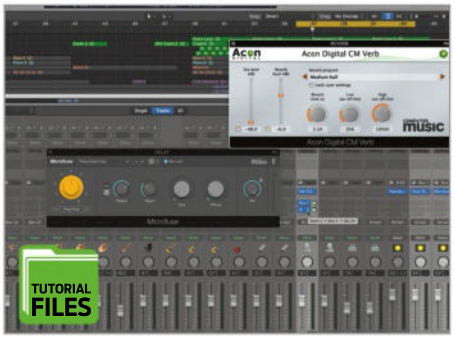


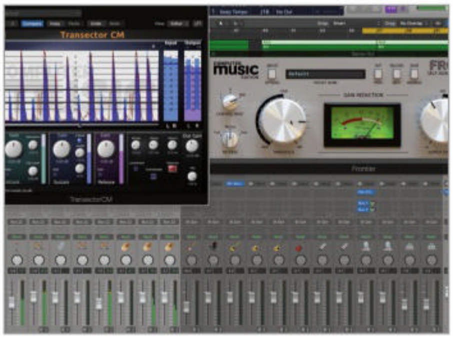
3 > The second method is opening up the snare MIDI region we want to edit and inserting extra snare hits where we want the fills to be. Listen out for where you want them – we've stuck this one at bar 52. The Beat Machine plugin is velocity sensitive, so you can tailor the loudness of the extra hits to sound more natural.

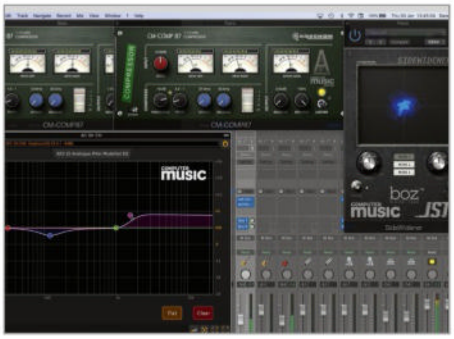


> Step by step

4. Mixing the track



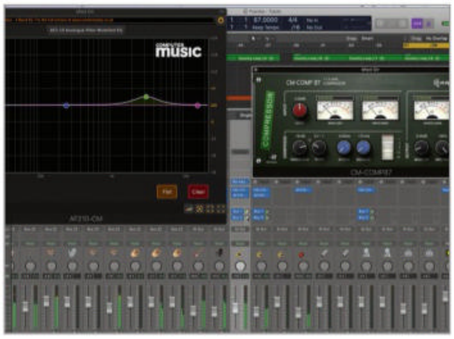


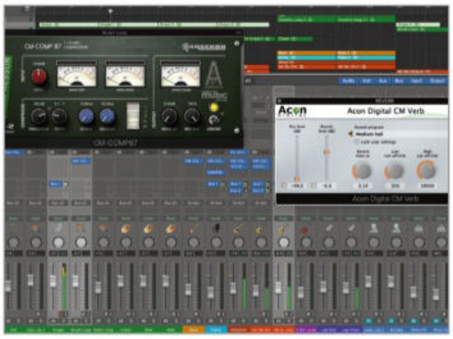


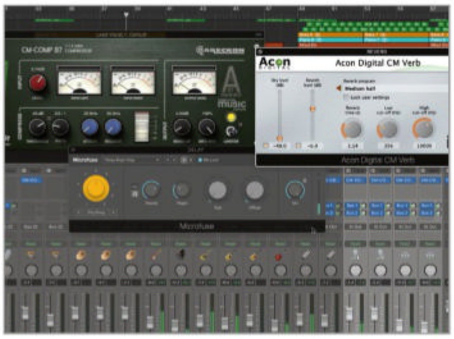
1 > Begin by setting up some bus effects for general use throughout the mix, that can be sent to from the sends on every channel in the project. We've put an Acon Digital CM Verb reverb on bus 1 and a stereo delay from Surreal Machines MicroFuse on bus 2, with settings as shown above.

2 > Set each drum track's output to the same stereo bus (22 in this case), then insert Transector CM across the return channel. Mute all tracks, then mix in the outro chorus drums one at a time. We've inserted a D16 Group Frontier limiter across the stereo output to keep a lid on the overall level as we go.

3 > Bring in other instruments one at a time, balancing the levels, starting with the bass, then piano and guitars. Most tracks will benefit from gentle compression from the CM-COMP87, and if you need EQ, the Overtone DSP AF2-10CM can help – here we're using it to brighten up the acoustic strummed guitar.







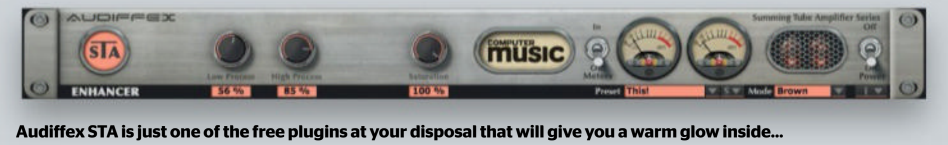
4 > The muted guitar needs some attention, so to maximise the pickiness and bring out the quieter details, we add an EQ boost at 3kHz and insert a compressor with the settings shown. We then add the reverb (via the bus 1 sends) to add some atmosphere to the intro.

5 > Next, we add the intro/verses' picky guitars, splash some reverb on the finger snaps and blend in the brush loop in Verse 2, using a compressor to bring out the detail in the loop. Balance the parts in the intro and Verse 1 carefully so that the chorus has enough impact when it drops.

6 > Finally, add in the vocal tracks with reverb and delay via the bus sends. You can balance the levels using the compressor's output level as well as the channel fader. We've set Harmony 1 about 8dB below the lead and Harmony 2 3dB below that for the perfect blend.

Saturation point

Although most commercially-recorded material has that polished, ProTools-esque 'sheen', country is a genre that lends itself to a vibrant, organic sound that harks back to traditional instruments, all recorded with analogue gear in big, professional studios. As a result, it can often pay to get your track sounding as authentically 'live' as possible, and one way of achieving a warm, analogue sound is via the judicious use of virtual analogue preamps, channel strips and tape saturation and distortion plugins. Used carefully, these can make everything sound as if you've recorded all your parts 'hot' to a two-inch tape machine through an analogue preamp or similar, giving your production the kind of rounded, ear-friendly listening experience that befits this style of music. At your disposal in the *Computer Music* Plugin suite you'll find a number of these kinds of devices, such as the Sonimus Satson CM mixer channel emulator, the Lindell 6X-500 CM classic preamp emulation with EQ, and the valve-style Audiffex STA Enhancer CM. Give 'em a try for that live feel!



Audiffex STA is just one of the free plugins at your disposal that will give you a warm glow inside...

POWER TIP

> Automation situation

Once you have an overall balance that sounds good, enable your DAW's automation system and use it to add extra movement and dynamics to your mix. All DAWs now allow you to either write fader moves onto tracks in real time, or alternatively draw automation curves in by plotting control points with your cursor. It makes all the difference to a final mix, lifting a single word here, automating a bunch of mutes there, panning a cool sound across the stereo image at a certain point. The only limit is your imagination!

TRAP

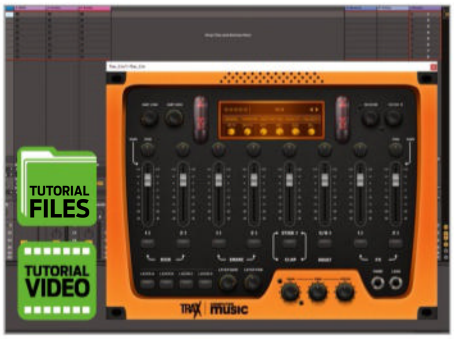
> Trap music is an offshoot from hip-hop, and originated in the southern USA during the late 90s and early 2000s. Generally starker than hip-hop, both in its lyrical content and production, trap takes its name from the trap houses in which illegal dealings occur, with crime being a key lyrical theme. Unlike many classic hip-hop beats that major heavily on sampled breaks and one-shots for the rhythm track, trap instead uses classic Roland TR-808 samples for the drum track, often with the kick and bass combined into one musical, yet percussive element.

Musically, trap records generally feature a lot of synth pads, drones and leads, with sampled one-shot stabs or loops also used in places. However, a basic trap rhythm track can work well with musical ideas from a wide variety of other genres, as evidenced by the influence of trap music on other strands of hip-hop, pop and dance culture. Many records across these genres make use of production techniques from the genre, ranging from trademark trap drum sounds, patterns and fills, through to manic chopped-up vocal samples or stabs.

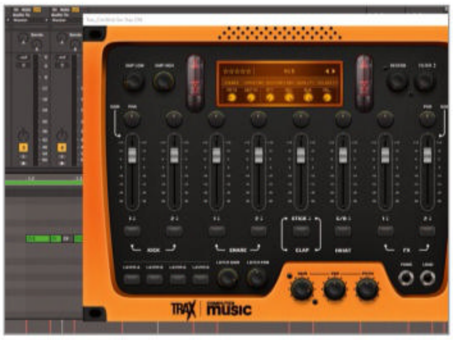
Over the next few pages, we'll show you how to make a bona fide trap track using just this guide, any DAW plus the samples and the massive **cm** Plugin Suite we have available at filesilo.co.uk (under Bookazines/Beginners Guide To Music Production). We'll be using Ableton Live 10 for this feature, but these techniques can also be used in any other DAW.

>Step by step

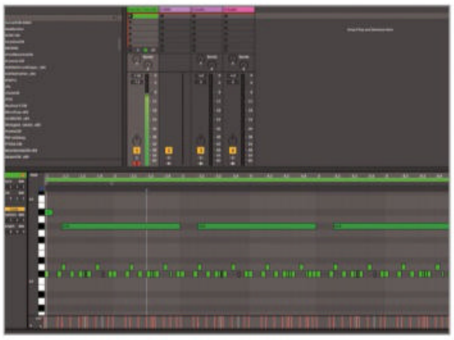
1. Through the trap door



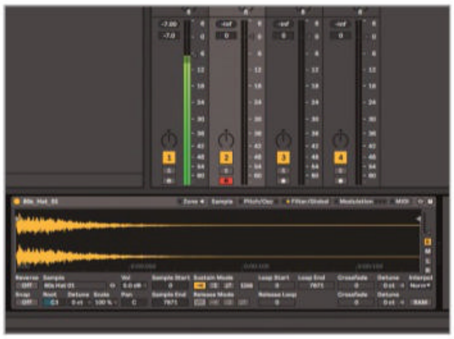
1 > Let's kick off our trap endeavours by making a basic drum track. Set your DAW's BPM to 70, then call up Thenatan Trax CM onto a fresh MIDI track. Trax CM is a great source of one-shot drill and trap drum samples that'll be a great foundation for our rhythm section. Open the plugin, and select Kit 8 from the preset menu. Now, we'll put down a drum pattern.



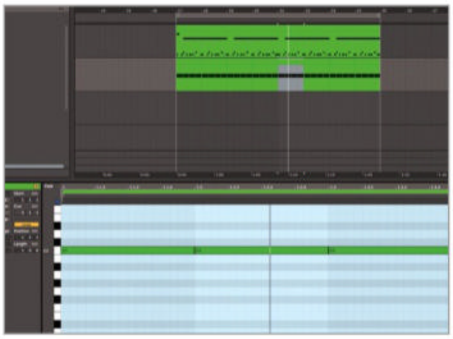
2 > Create a new MIDI clip, then draw in a kick and snare pattern of your choosing over four bars. We'll use Kick 2 and Snare 1 from our Trax CM kit, as they have the kind of sound we're looking for straight out of the box. The one-shots provided by Trax CM are pretty hot, levels-wise, so turn the MIDI channel's volume down to -7dB to preserve headroom.



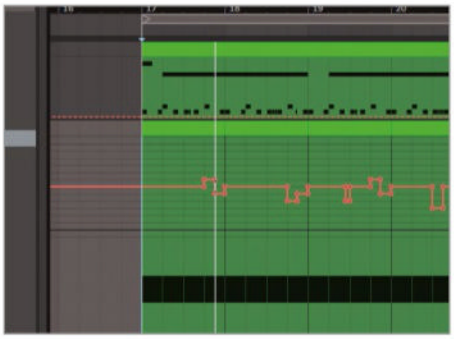
3 > As well as snappy drum hits, Trax CM also has sound effects included with each preset. Extend our drum pattern to eight bars, then add a crash (FX 1) to the start of the loop. Reduce the velocity of the crash, so it blends in with the drums. We'll draw in notes to trigger FX 2 (a vocal snip) so it plays on the second beat of every two bars.



4 > Now, let's create an authentic trap hi-hat loop. Load any sampler onto a new MIDI channel, then import 80s_Hat_01.wav from the Trap folder at filesilo.co.uk; this hi-hat sounds very like the TR-808 hats found in trap. Trap hi-hat patterns are usually fairly complex, so to minimise programming we use a MIDI arpeggiator plugin to quickly create ours.



5 > Add a new one bar MIDI clip to the hi-hat channel, then draw in C3 notes to trigger the hat on every beat. Next, copy the MIDI clip across our eight-bar drum arrangement. If it's not already velocity sensitive, set up the sampler so that the volume of each hat is controlled by the velocity of the MIDI note(s) played – we'll be making use of this later on.



6 > Now we use the MIDI arpeggiator to easily control the speed of our hi-hat by adjusting the Sync Rate. A bit of automation lets us quickly create an interesting pattern; using triplet settings such as 1/24th of a beat gives us that off-kilter swagger all great trap records have. Dialling in a little velocity randomisation gives us an even more authentic sound.

RECOMMENDED LISTENING

TRAP QUEEN
Fetty Wap

FETTY WAP
TRAP QUEEN
This 2014 hit is built on EDM-style lead riffs and bass, over a classic trap rhythm track and finished off by heavily auto-tuned vocals from Fetty Wap.

bit.ly/fw_tq

RICK ROSS
BMF

RICK ROSS
B.M.F
Epic orchestral stabs backed up by deep 808s and a snappy snare gives B.M.F a huge, neck-snapping sound: the ideal backing for Rick Ross's flow.

bit.ly/rr_bmf

Baauer
HARLEM SHAKE

BAAUER
HARLEM SHAKE
Harlem Shakes's booming 808 bass drums, sliced vocal builds and detuned lead line were a lot of people's introduction to the sound of the genre.

bit.ly/br_hs

KEYS 'N KRATES

KEYS 'N KRATES
DUM DEE DUM
Keys 'N Krates went all in on the slicing and dicing here, taking chunks of instrumental and vocal samples and replaying them into hooks over a thumping trap beat.

bit.ly/KnK_DdD

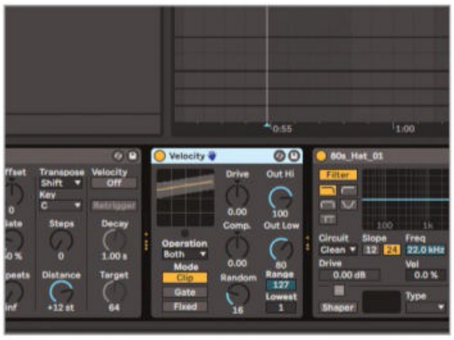
PRO TIPS

SIDECHAINING

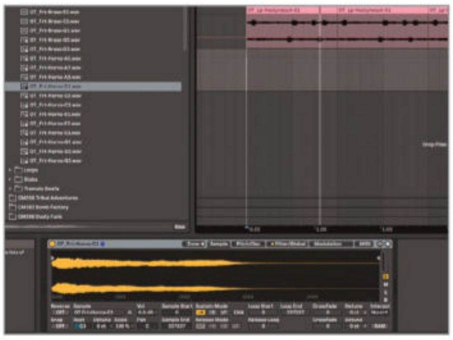
An often used effect in trap production is sidechain compression, both for mixing and creative purposes. Using your bass hits as triggers for sidechain compression, for example, can make it sound like your bass is dominating the mix as the elements being compressed are reduced (or 'ducked') in volume. Or, you can instead use a silent trigger track to drive a sidechain compressor, allowing you to trigger the compressor with any drum pattern of your choice.

IMPERFECTION

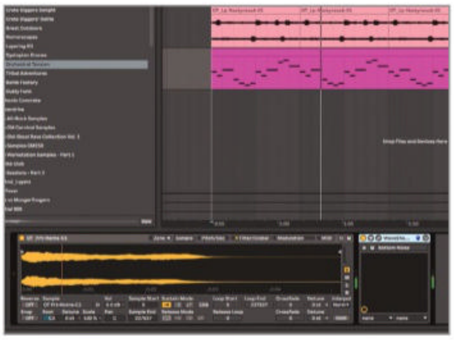
Part of the charm of early trap music was the rawness of the production thanks to the low budget setups used by producers, so don't feel guilty for breaking the usual rules about gain structure, EQ or suchlike in pursuit of an authentic sound. For example, parts like 808 bass drums or synths would stand out for being too loud, or slightly harsh-sounding which contributed greatly to the aggressive, rough sound of the records.



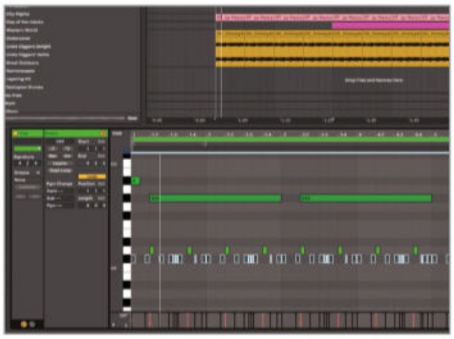
7 > Put the Velocity plugin after our arp, so it affects the patterns we've already programmed. Setting the Out Hi to 100, and Out Low to 80 gives a small range of variance between the loudest and quietest hi-hats. Push Random to 16. You'll hear the velocity of each hat change, adding dynamics to our drums. Reduce the hi-hat to -4dB to preserve mix balance.



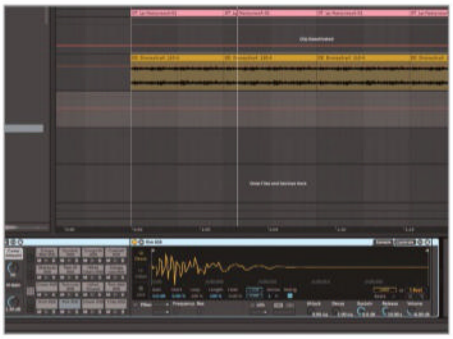
8 > Let's add other sounds. A noise loop from is an ideal start, so add OT_Lp_NastynessA-01.wav onto a new audio track. Turn the loop's volume down to -24dB, for atmosphere without swamping the mix. Next, we make a horn stab riff. Load any sampler onto a blank MIDI track, and import OT_Frt-Horns-C1.wav from the same Trap folder.



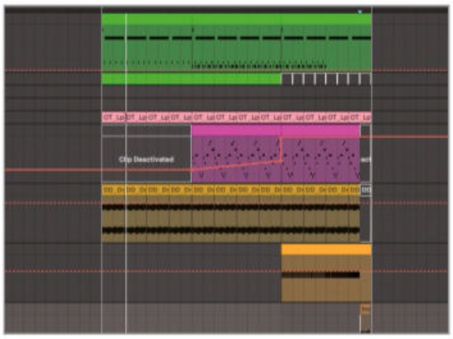
9 > Add Horn.mid from the Tutorial Files folder. The horn sound is a bit weak, so let's crunch it up using Cableguys' WaveShaperCM. Call up the Bottom Noise preset, then reduce the wet/dry mix to 5%. This adds bite, without over-distorting it. Turn the horn's volume down to -3dB blends it into the mix.



10 > A droney arp from the Trap folder adds another layer. Import DD_DroneyArp4_110-A.wav onto a fresh audio channel, then duplicate it across the arrangement. Now duplicate the entire arrangement twice, so we have a 24-bar section in total to use as our intro. Muting the kick drum and horn for the first eight bars helps with setting the scene.



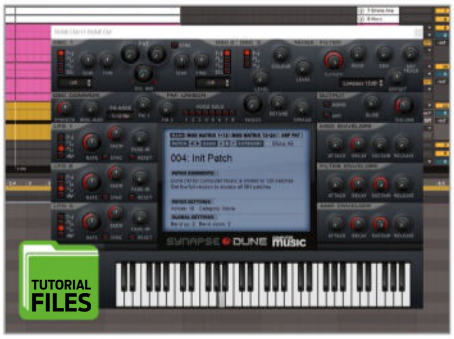
11 > Low-pass filtering our horn for eight bars adds suspense to our intro. Call up Vengeance's VPS Philta CM, and draw in some automation of the low-pass filter. Now, we'll turn the last eight bars into a build to the drop; muting the hi-hats lets the listener know that the arrangement is about to change. Load up an 808 drum kit, so we can make a clap build.



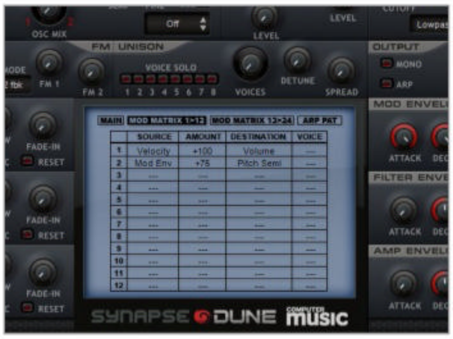
12 > Add a MIDI clip, draw two clap notes in on every beat for the first four bars, before speeding up the claps for the second four. Automate the velocity, so that the claps gradually get louder. Mute the kick and snare for the final four bars, before muting the horn and keys from the last bar, making room for a vocal like the supplied bass_mode_deactivated.wav.

> Step by step

2. Making a trap riser

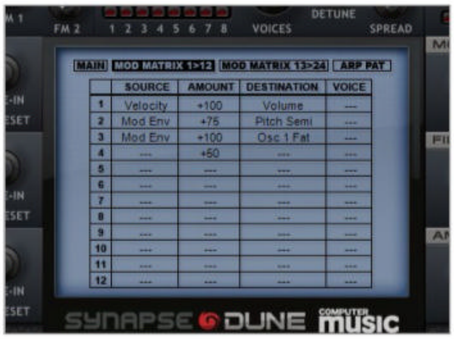

TUTORIAL FILES
004: Init Patch
SYNAPSE DUNE COMPUTER MUSIC

1 > Synthesise your own huge riser effect easily using Synapse Audio's DuneCM. Load the synth onto a fresh MIDI channel, then program in a seven-bar A1 note, starting from bar 17. This'll play our riser leading to the vocal snip before the drop. Reset DuneCM by loading the Init preset.


OSC MIX
FM UNISON
VOICE SOLO
LEVEL
DETUNE
SPREAD
OUTPUT
MONO
ARP
MOD ENVEL
FILTER ENVE
AMP ENVEL
FADE-IN
RESET
ATTACK
MAIN
MOD MATRIX 1>12
MOD MATRIX 13>24
ARP PAT
SYNAPSE DUNE COMPUTER MUSIC

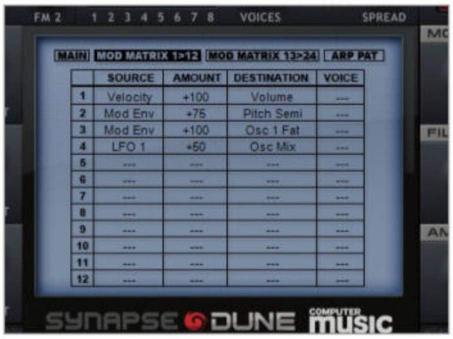
	SOURCE	AMOUNT	DESTINATION	VOICE
1	Velocity	+100	Volume	---
2	Mod Env	+75	Pitch Semi	---
3	---	---	---	---
4	---	---	---	---
5	---	---	---	---
6	---	---	---	---
7	---	---	---	---
8	---	---	---	---
9	---	---	---	---
10	---	---	---	---
11	---	---	---	---
12	---	---	---	---

2 > Open the Mod Matrix, and choose Mod Envelope as the source. Make Pitch Semi the destination, with the amount at +75. Now, the Mod Envelope controls the pitch of our sound; push the Attack and Decay to max, and you'll hear the pitch rise and fall as the sound plays.


FM 2
DETUNE
VOICES
SPREAD
MAIN
MOD MATRIX 1>12
MOD MATRIX 13>24
ARP PAT
SYNAPSE DUNE COMPUTER MUSIC

	SOURCE	AMOUNT	DESTINATION	VOICE
1	Velocity	+100	Volume	---
2	Mod Env	+75	Pitch Semi	---
3	Mod Env	+100	Osc 1 Fat	---
4	---	+50	---	---
5	---	---	---	---
6	---	---	---	---
7	---	---	---	---
8	---	---	---	---
9	---	---	---	---
10	---	---	---	---
11	---	---	---	---
12	---	---	---	---

3 > We'll also use the Mod Envelope to fully modulate Oscillator 1's Fat control, giving a detuned sound. Turn DuneCM's output volume down to 15%, so that the rise blends into the mix. Pushing the Noise Oscillator's level to 20%, and colour to 100% adds white noise fizz to the sound.


FM 2
VOICES
SPREAD
MAIN
MOD MATRIX 1>12
MOD MATRIX 13>24
ARP PAT
SYNAPSE DUNE COMPUTER MUSIC

	SOURCE	AMOUNT	DESTINATION	VOICE
1	Velocity	+100	Volume	---
2	Mod Env	+75	Pitch Semi	---
3	Mod Env	+100	Osc 1 Fat	---
4	LFO 1	+50	Osc Mix	---
5	---	---	---	---
6	---	---	---	---
7	---	---	---	---
8	---	---	---	---
9	---	---	---	---
10	---	---	---	---
11	---	---	---	---
12	---	---	---	---

4 > To finish, we'll assign LFO1 to modulate the Oscillator Mix control at +50. Set Oscillator 2's shape to Square with the Semi tuning at -12 semitones. The LFO modulation will mix the two oscillators together rhythmically, with the tuning-down of Oscillator 2 adding a nice undertone to our rise.

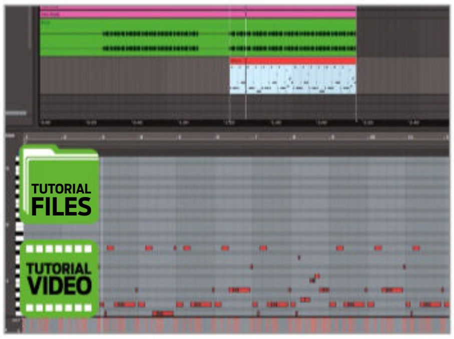
Trap leads

Having a powerful lead line in your trap track will give it the OTT sound that trap music is famous for. Lead sounds in trap are varied, ranging from EDM-esque massive detuned synth leads through to sampled horn lead lines. How you achieve your trap lead is entirely up to you. You can make one from scratch using a synth; if you take this route, applying lots of detuning, and adding an extra high-pitched oscillator in the mix all helps with making your lead sound bigger.

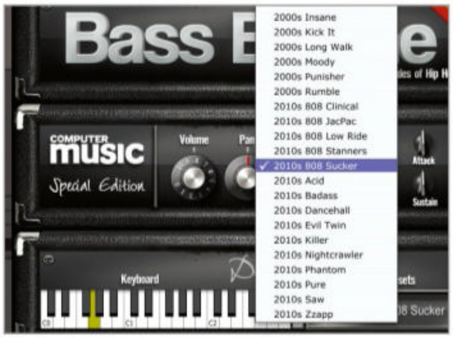
Alternatively, you can use one-shot samples to create a heavyweight lead. Orchestral stabs, bells and synth bleeps are all great sounds to use, particularly if you can add some extra detuning and distortion in your sampler for extra attitude. Whichever way you make your lead sound, drawing for some epic reverb and delay will help with making the lead more of a standout part of your song – you can also automate these effects to add extra depth.

> Step by step

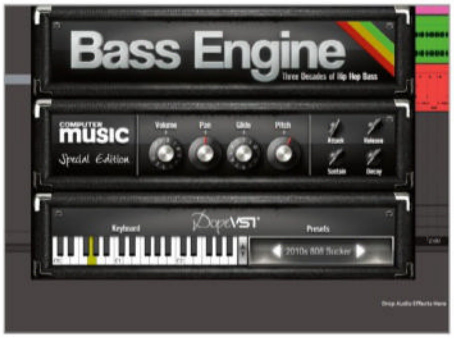
3. 808 bass with DopeVST's Bass Engine CM


TUTORIAL FILES
TUTORIAL VIDEO

1 > We'll add a bone-crushing 808 bass drum to our track, courtesy of DopeVST's superb Bass Engine CM. Load the synth onto a fresh MIDI track, then import 808 Bass.mid – this is a bassline sequence we made earlier. Next, turn down the channel's volume to -10dB to retain headroom.


Bass E
e
COMPUTER music
Special Edition
Volume
Pan
Attack
Sustain
Keyboard
sets
08 Sucker
2000s Insane
2000s Kick It
2000s Long Walk
2000s Moody
2000s Punisher
2000s Rumble
2010s 808 Clinical
2010s 808 JacPac
2010s 808 Low Ride
2010s 808 Stanners
✓ 2010s 808 Sucker
2010s Acid
2010s Badass
2010s Dancehall
2010s Evil Twin
2010s Killer
2010s Nightcrawler
2010s Phantom
2010s Pure
2010s Saw
2010s Zzapp

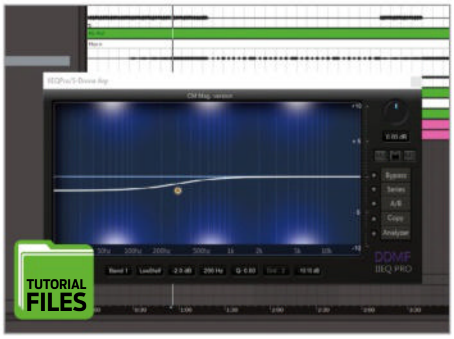
2 > There are five 808 presets on offer, all of them modelled on 808 bass sounds from well-known hip-hop producers. Cycle through them, until you find one that you like best. We've gone for 2010's 808 Sucker, as it fits well with our kick drum and is rich in mid-range harmonics.


Bass Engine
Three Decades of Hip Hop Bass
COMPUTER music
Special Edition
Volume
Pan
Glide
Pitch
Attack
Release
Sustain
Decay
Keyboard
DopeVST
Presets
2010s 808 Sucker

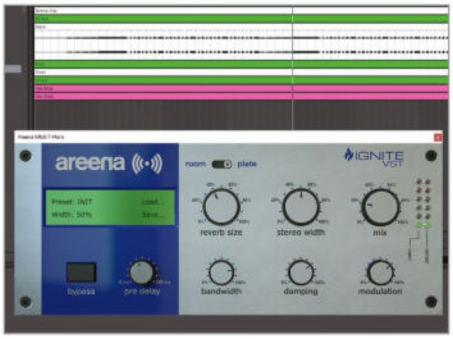
3 > We can give the 808 bass a tighter sound by reducing the sustain, decay and release to a minimum. Pushing the Attack up to 1 o'clock makes extra room for the kick's transient to poke through. To finish off, adjust the Glide amount to make our bass sound more unique.

> Step by step

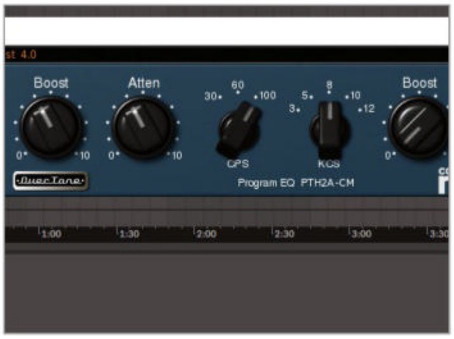
4. Making your trap mixdown



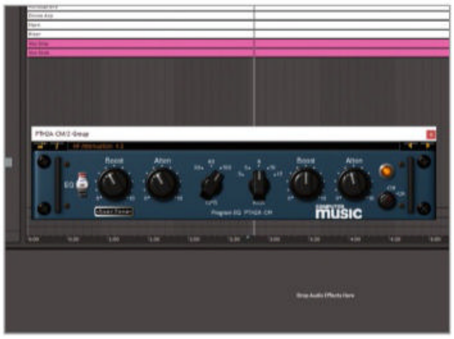
1 > Let's kick off by EQing the drone arpeggiator to make it fit more elegantly in the mix. Call up DDMF's IIEQ Pro CM, and set Band 1 to Low Shelf. Dial in a -2dB cut at 300Hz, and you'll hear less clashing in the low mid frequencies, increasing overall clarity.



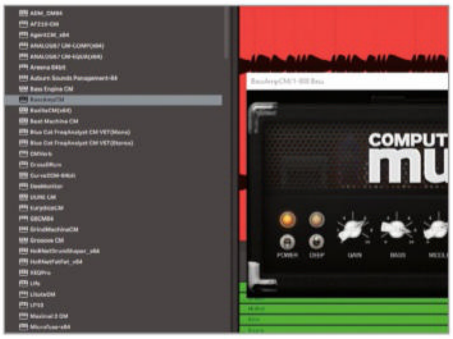
2 > Reverb, courtesy of Ignite VST's AreenaCM, will energise the horn stab. Load the plugin, and decrease the reverb size to 40% so that reverb tails don't swamp the mix. Pushing the modulation to 70% creates an interesting, synthetic tone. Blend the reverb in by reducing the wet/dry mix to 20%.



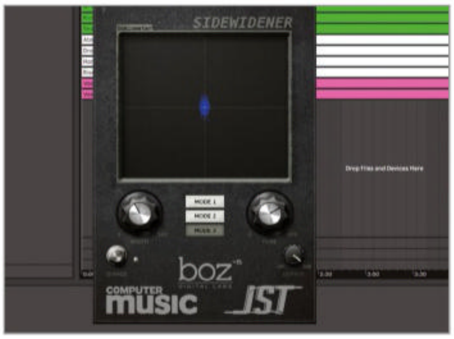
3 > Group the drums together, so we can process them collectively. OverTone's PTH2A-CM EQ is ideal for shaping the tone in a similar way to how a classic Pultec EQ does it. Push the low boost and attenuate dials to 4, with the CPS set to 100Hz to make the low-end sound fuller.



4 > Tame the highs by boosting at 8kHz (KCS), while also cutting to create a musical curve that's unique to this EQ. We'll dial in a 5 boost, with a 4.5 cut. You'll hear that the high frequencies now sound bright, but with less harshness from the snare and hats.



5 > We can make the 808 bass stand out more by adding some distortion. Audio Assault's BassAmpCM is just the job. Load it up and reduce the Mix to 5, so our bass isn't too distorted. Boosting the Bass dial to 8, and Middle to 6 makes the distortion sound fuller.



6 > To finish, we'll add extra stereo width to the 808 clap fill. First, add JST's Sidewidener CM. Try the three modes out; mode 3 adds great mid-frequency width. Reduce the Width to 40, so the effect sounds less extreme. Increasing the Tone to 70 adds extra high frequency bite.

Drum mixing

Part of making convincing trap music is getting the kick and bass sounding on point, both in terms of the pattern and also how the two sounds co-exist.

A good trap kick/bass pattern will drive the track forwards and rattle the bass bins, while still keeping it danceable. It pays to work on this with some attention to detail, as the bass and kick groove lays the foundation for the musical and vocal elements to sit upon.

As most trap tunes mainly use an 808 bass drum layered with a kick as a combined instrument, it's crucial that the kick is pitched away from the bass, so that the fundamental frequencies of the two layers clash as little as possible.

Roland Cloud 808 is a great paid option for getting the trap bass/kick sound down to a tee

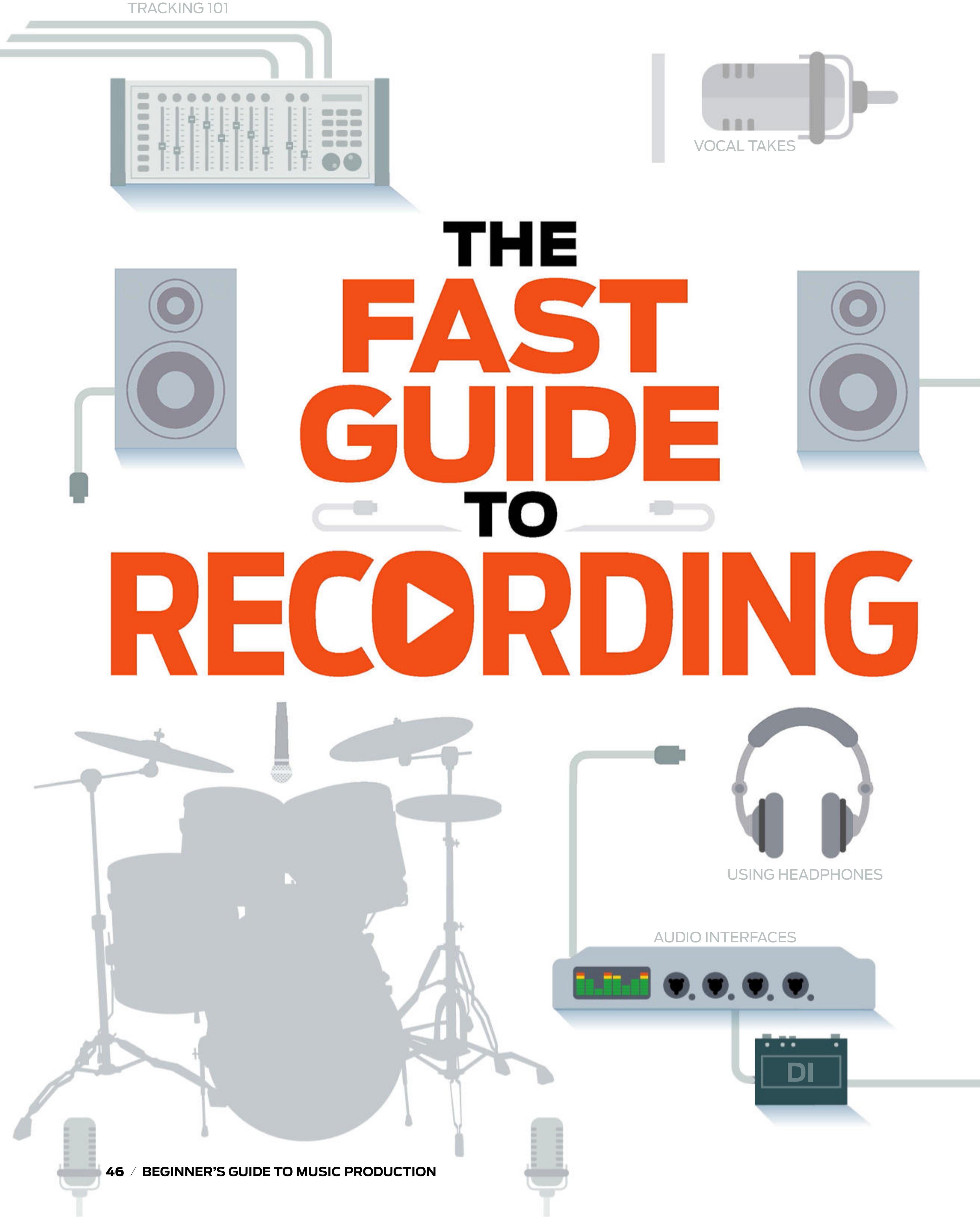
While getting the pitch right is vital, it's also important to make sure that the kick's sustain is as short as possible so that it doesn't ring out over the 808 bass. By using separate kick and 808 layers, we can play a musical bassline using the 808, while the kick's pitch stays static.

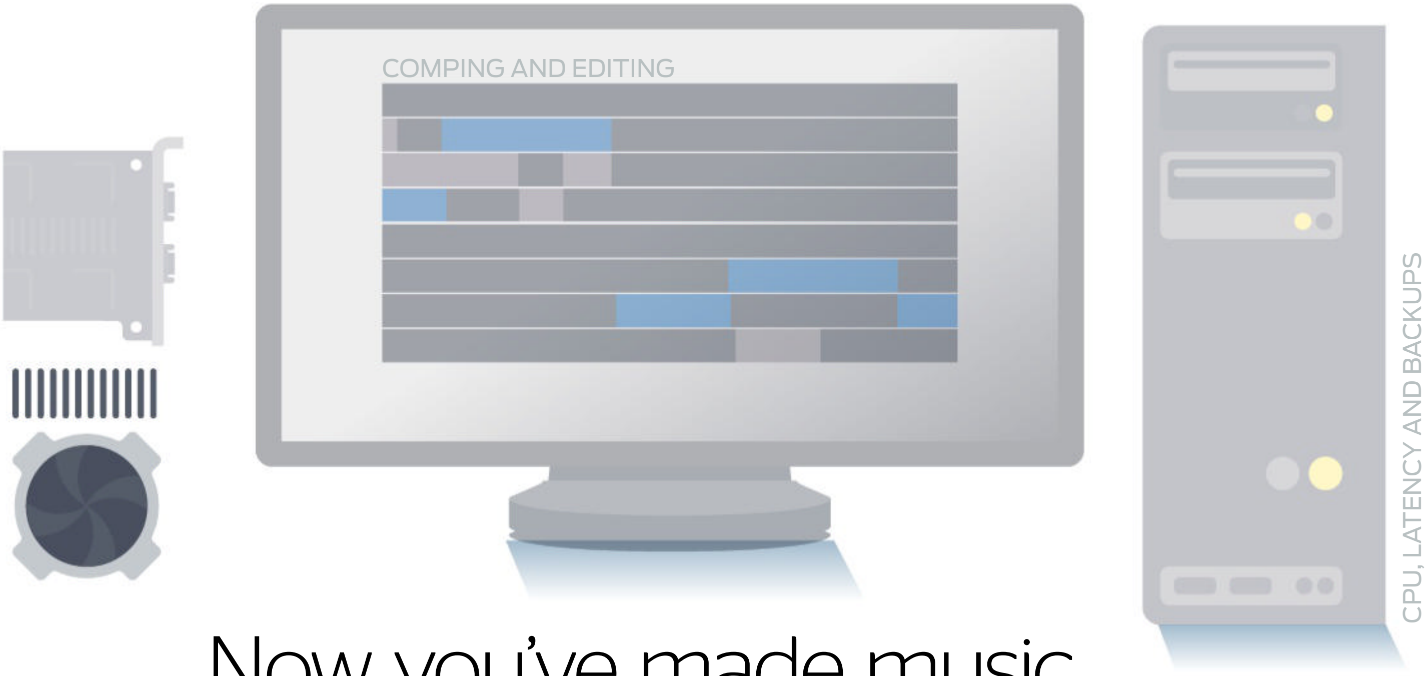
POWER TIP

> Drop everything

As with other styles of electronic music that are popular in the US, such as dubstep or EDM, trap often features over-the-top build-ups, before snapping into a relatively minimal drop. You can achieve this effect yourself using a number of techniques, one of which is looping over a short section of your intro's musical and/or vocal elements to lead into the drop. Or, you can use claps on each beat to add momentum, with effects such as risers and white noise swells also increasing the effect.

THE FAST GUIDE TO RECORDING

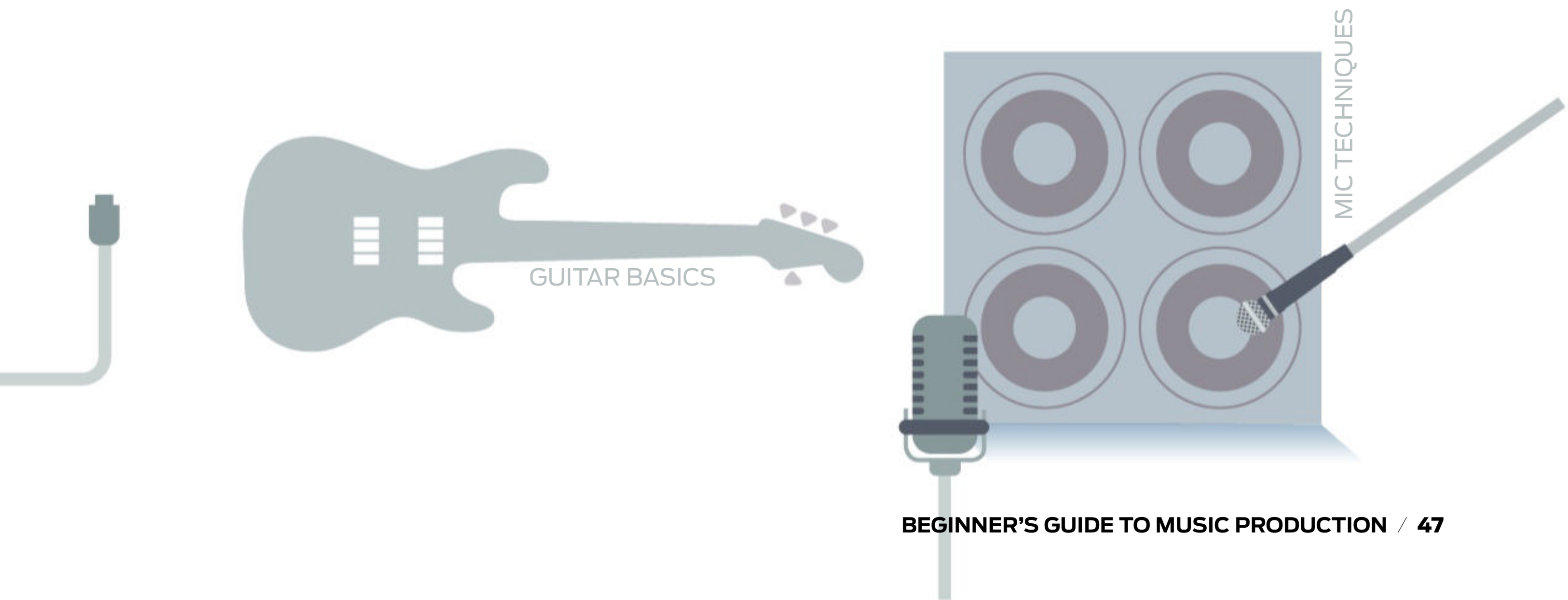

TRACKING 101
VOCAL TAKES
USING HEADPHONES
AUDIO INTERFACES
DI



Now you've made music 'in-the-box', it's time to record sounds into your computer from the outside world...

> Using samples and virtual instruments in-the-box – as we have done in the genre tutorials in this Music Production guide – provides incredible creative freedom when producing tracks. However, there may well come a time when you want to expand your sonic palette to incorporate sounds you've recorded yourself. Thankfully, most DAWs are also powerful multitrack recorders, perfectly capable of capturing everything from a single tambourine hit to a full multi-miked band.

This back-to-basics feature is designed to show you how to record anything! We'll begin with hardware and software requirements, looking at what you do and don't need, and running through the advantages of certain features. Then it's time to consider the process of setting up and making connections, and how to get those signals into the DAW. We also need to look at how we can hear what we're doing while recording and any potential issues with CPU latency. Overdubbing is next on the list, as we look at the best way to build up recordings piece by piece, and we'll also touch on the process of editing and compiling. And rounding things off, we have a collection of tips to help you achieve better recordings. Let's plug in...



What you need

Audio interface

An audio interface combines with your computer and DAW to create a complete audio and MIDI-based production system. The interface itself gets audio (and possibly MIDI) signals into and out of your computer, so it's the 'box' to which you connect your mics, instruments and line level signals, and that handles output to your monitors and headphones. It may also have MIDI ins and outs, enabling older MIDI-based hardware – synths, keyboard controllers, etc – to be plugged in. Most keyboard controllers these days incorporate direct USB connection to your computer, so the inclusion of MIDI I/O on your interface might be unnecessary.

The first thing to consider when choosing an audio interface is how much connectivity you actually need: think about the number of microphone inputs, instrument inputs, headphone outputs and main monitor outputs you'll be using simultaneously. Clearly, just recording a single vocalist doesn't require much in the way of specs, but recording a drum kit or a whole band is much more demanding. These factors will have a bearing on the type of interface you need.

Focusrite
Audient
M-AUDIO
TASCAM

USB interfaces like the M-Audio M-Track and Focusrite Scarlett are popular choices

An audio interface connects to your computer using one of several connection protocols, the most common of which is USB. This ubiquitous standard is available on most computers and includes bus powering capability, alleviating the need for an external power supply. However, most affordable USB interfaces only offer up to around 20 streams of simultaneous recording at 24-bit/48kHz, so, if that's not enough, there are other more expensive options to consider. These include certain higher-end USB 3.0 systems; PCIe card-based systems using Ethernet, MADI or proprietary connections; Thunderbolt (versions 1, 2 and 3); and Firewire (400 and 800).

> "Consider what connectivity you actually need"

The next thing to consider is how the interface handles headphone monitoring. Typical options are either a simple mix control on the front (great for a simple vocal session), or more capable but complex software-based monitoring (for a band setup). Finally, most recordings are made at 24-bit, at either 44.1kHz or 48kHz, but many interfaces offer higher sample rates – 96kHz and 192kHz – so you also need to decide whether or not this is going to be important to you.

DAW

With a suitable interface sorted, you can record your microphones and instruments in any application that supports audio input, and whether you're on Windows, MacOS or Linux, there are a raft of free apps available to get you started – Audacity and GarageBand, for example. However, these are comparatively limited in their functionality, and when you get into the realms of adding recordings one at a time (overdubbing) or recording multiple inputs together, you'll need a professional quality digital audio workstation (DAW) that can perform such tasks effortlessly and, most importantly, reliably.

It's quite possible that your audio interface includes a free bundled DAW (Ableton Live Lite, Steinberg Cubase LE/AI or PreSonus Studio One Artist, for example). These are usually feature-limited versions of each company's full-priced offering, but for simple recording sessions they should suffice. What's more, most of them put you on a discounted upgrade path to the more fully-featured sibling.

Nonetheless, there's still a definite advantage to having the full version of any DAW: flexibility. You'll typically get unlimited tracks, multiple sends and returns, the ability to record many inputs simultaneously, a bundle of additional plugin effects, virtual instruments and audio content, and advanced editing features such as pitch correction and audio warping. Indeed, if pitch correction is important, PreSonus Studio One comes with an embedded version of Melodyne, while Avid Pro Tools incorporates excellent flexible time adjustment in the shape of Elastic Audio. For bundled content, Apple Logic Pro X includes an impressive library of Apple Loops and a ton of softsynths and plugin effects, while for creativity, Ableton Live features both the traditional timeline-based Arrangement View, and the 'non-linear' clip-based Session View.

The final thing to consider is your personal preference with regard to DAW design, layout and workflow. Most DAWs essentially take you to the same end product in different ways, and thus share many core features; but until you try a particular DAW for yourself, it's hard to know whether or not it will suit you. Again, those bundled 'lite' editions and free versions let you try before you buy.

Studio One 5
PROFESSIONAL EDITION
PreSonus

PreSonus' Studio One Artist edition comes free with certain audio interfaces

Microphones

Microphones turn soundwaves into electrical signals, which can then be recorded. It's a simple enough concept based on some pretty fundamental physics, but there are variations in how they work and what they 'hear'.

Each type of microphone has its own particular 'polar' or 'pickup' pattern. An omnidirectional mic picks up everything around it reasonably equally, while a cardioid directional mic picks up the signal in front of it more than that at the sides or rear. Another common type is the 'figure-8', which picks up the front and rear equally but rejects the sides; while the hypercardioid provides a narrower directional pattern. Some mics even have multi-pattern capabilities, allowing you to choose from two or more patterns.

It's important to understand what any given mic is actually hearing, so you can choose one that suits the task at hand and the space you're in. The most ubiquitous type of mic is the cardioid, because it's directional, so by pointing it at your source, you'll hear that more than everything else – particularly useful when you want to try and isolate what you're recording from other sounds. A cardioid mic does still pick up sound from behind it and to the sides – it's just less sensitive there. It also exhibits something called the proximity effect, creating an obvious bass boost as you get closer to the capsule. All this adds up to a design that's functionally useful but not completely transparent in its behaviour. In larger spaces with good acoustics, an omnidirectional mic will deliver a more natural sound; they also work well used as spaced pairs to record in stereo.

Shure's SM58 (above) is a popular dynamic mic, while Royer's R-10 (right) is a smooth-sounding ribbon mic – ideal for recording guitars

Sontronics' STC-3X: a multi-pattern, large-diaphragm condenser mic

The other important consideration with any mic is the way in which it converts soundwaves into electrical signals. There are three main types: dynamic, condenser and ribbon. Dynamic mic capsules incorporate a moving coil and magnet. They're robust, reliable, affordable and typically used for live vocals, kick drums, toms and other 'high-impact' sources. A condenser mic capsule is a capacitor, so it requires some type of power (often 48V phantom power via the mic cable) and is less robust, but more sensitive and accurate than a dynamic. Condensers are well suited to studio use and popular for recording vocals, guitars, pianos and room signals.

"Mic technology is simple enough, but there are variations in how they work"

Finally, the ribbon mic employs a thin metal foil or 'ribbon' and a magnet in its pickup. This is very fragile, and has a low output level and – by design – a figure-8 pickup pattern, for smooth, natural results. It's also excellent at handling bright, complex sounds such as cymbals and brass.

Accessories

It's wise to allocate most of your budget to decent microphones, but there are a few other extras that you'll need, too.

Mic stands can be acquired reasonably cheaply or second hand, but aim for the best quality you can afford, as cheaper stands are harder to adjust and tighten, and may droop or topple over with heavier mics. Stands also vary in height, and it's practically impossible to mic up a snare drum with a full-sized stand, as it gets in the way – so be prepared for the instruments you're recording.

New mics usually include a clip, cradle or both to attach the mic to the stand. The cradle is excellent for insulating the mic from vibration, and so should be used if possible, but may not be easy to position for certain instruments. Universal clips are available and often come in handy.

For recording vocals with a cardioid condenser, some form of pop shield is a must. If you're strapped for cash, you can make one from a coat hanger and a pair of tights, but a proper one is easier to set up.

Finally, make sure you have enough long mic cables to get the signals from the instruments that you're recording with to your interface.

Live and direct

Recording an electric guitar (or bass) straight into the audio interface, rather than via an amplifier, is called a DI (direct injection) connection, and it will get you a nice clean signal that you can process later in your DAW. However, you need some way of handling the very high impedance output of the instrument. Historically, you would use a DI box for this, and these are still useful when you want to record both the amplifier output and DI, as they also split the signal. To record just a DI, however, look out for a high impedance (Hi-Z) input on your audio interface.

ONYX
Producer 2·2
SIG/OL
MIN
MAX
GAIN
1
HI-Z
SIG/OL
MIN
MAX
GAIN
2
HI-Z
ONYX MIC PREAMPS
INPUT
DAW
MIX
+48V
MIDI
USB
MONITOR

Mackie's Onyx Producer 2.2 audio interface features a Hi-Z input for recording DI signals straight into your DAW

> Step by step 1. Microphone setup and plugging in

SIG/OL
MAX
GAIN
HI-Z
ONYX MIC PREAMPS
2

1 > Before plugging or unplugging mics, and to avoid equipment damage, ensure that your speakers are muted and phantom power is switched off. Suspend the mics on suitable stands and plug in the mic cables. Finally, switch on phantom power if required, then unmute your speakers/monitors.

2 > To position a mic, get the stand in roughly the right place, hold the mic with one hand and slacken off the stand clamps. Move the mic and orientate it as required, then, while still holding the mic, tighten up the clamps. For a heavy mic on a boom stand, position one of the tripod legs under the boom to keep it stable.

ONYX Producer 2·2
The Leader whirlwind
SIG/OL
MIN
MAX
GAIN
HI-Z
NYX MIC PREAMPS
2

3 > Plugging an instrument into a Hi-Z jack input on an audio interface is straightforward, but remember to mute your monitors before unplugging it. If you're using a separate DI box, the output is a standard XLR mic cable that runs to the mic input. Some DIs use phantom power – switch this on last.

Making connections

Plugging in mics, instruments and headphones, and getting ready to record is simple with a single mic, but harder with multiple mics, headphones and musicians. The key is in the preparation stage.

Have a plan for your room layout, and a list of inputs and outputs, even if you're just recording one guitar. This can help you see exactly what's needed, including numbers of mic leads, jack leads, headphones and so on, as well as which mics will require phantom power. If you do get confused by your cabling, remember that with XLR mic cables, the signal travels from male to female, so the mic has the male plug and the input on the audio interface is the female socket.

If you're recording other people, get all the mics connected and checked before they arrive, as waiting around for everything to be set up is a massive vibe killer. And try and keep the cabling tidy and out of the way, because the last thing you want is someone – even yourself – catching a cable and bringing your precious mic down to the floor with a thud.

> Step by step 2. Setting preamp gain

TUTORIAL VIDEO
The Leader whirlwind
SIG/OL
MIN
MAX
GAIN
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HI-Z
ONYX MIC PREAM

1 > Mics and DIs need to go through an amplification stage before being recorded. This is called the preamp and is incorporated into your audio interface. Setting the gain correctly not only ensures the signal is strong enough, but also gives the most noise-free transmission of it.

The Leader whirlwind
SIG/OL
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HI-Z
ONYX MIC PREA

2 > Setting the gain level involves some trial and error, but most interfaces include basic LED metering, which will run into the red when the circuit overloads. Start with the gain low and raise it until the meters are green, indicating a healthy signal level.

SIG/OL
MIN
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HI-Z
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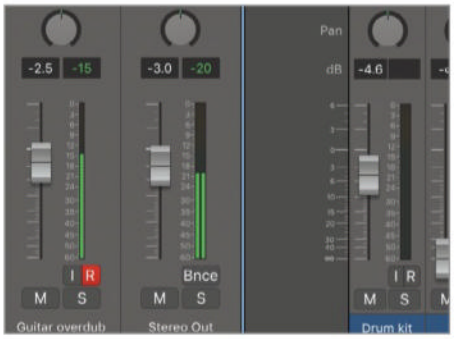
ONYX MIC PREAMPS

3 > Next, run through the track, listening out for loud sections or sudden peaks. Adjust the gain accordingly so that the meter remains predominantly green. Momentary peaks hitting red should be OK but a prolonged red light indicates that you're overloading the preamp circuit.


-2.5
-15
-3.0
-20
Pan
dB
-4.6
I R
Bnce
M S
Guitar overdub
Stereo Out
Drum kit

4 > Finally, look at the input level for the DAW track you're recording onto and check that the signal is at least a few decibels below zero. If it's anywhere near zero, reduce the preamp gain, as you risk clipping the input converters. Having signals peak at -10dB or even lower is perfectly acceptable.

Acoustics in your recording space

When you record an instrument in a space, you're capturing the direct sound of the instrument and the ambient sound of the space itself. The balance of room sound and direct instrument sound depends on many factors, including how near the mics are to the instrument, the pickup patterns of the mics and the volume level of the instrument. However, one thing that remains constant is the acoustic character of the particular space, and most people can hear the difference between a large space such as a concert hall and a small space such as a domestic lounge.

In simple terms, we can view this acoustic effect as having two components: early reflections and reverberant decay, or 'tail'. The latter tends to be quieter and comparatively diffuse, whereas early reflections tend to be more defined and clearly indicate the size of the space. Even in a domestic setting, these differences can be quite marked, from the clattery sound of a tiled bathroom, to the reverberant nature of a hallway, or the almost dead sound of a soft furnished space.

The sound of each room is a function of its size, shape and contents, particularly whatever's on the walls, ceiling and floor. When recording, it's important to tune in to this and use it to your advantage if possible. For that reason, if you're recording in a domestic environment, rather than spending time and money trying to design an acoustic space from scratch, it might be simpler to just use a room that closely approximates the sound you want. Although this may not be particularly convenient and raises issues of isolation (see below), it can often yield the best results.

Whichever space you choose, it is possible to change the acoustic quite dramatically through various means. Typically, the more empty the space, the more 'live' it will sound, so to deaden a room you need to put more stuff in it. Upholstery and soft furnishings are very effective, and carpets and curtains in particular change a room's character noticeably. Conversely, if you want to liven up a space, add reflective surfaces. The floor is often the nearest surface to the instrument being recorded, so if it's carpeted, placing a wooden sheet on top can liven things up. Opening curtains and revealing any glass surfaces can also be helpful.

Isolation

Isolation is one of the hardest things to achieve in a recording environment and takes in a number of considerations. First, it's important to try to isolate the space we're recording in from outside noise, especially if you're recording a quiet source instrument, or one with a long sustain/decay. It should come as no surprise that professional recording spaces go to great lengths in this department, building floating rooms inside rooms, with dual layer doors and large air gaps between window glass. In a domestic or project environment, however, we need to be a bit more realistic, looking at the specific things we can control and those we can't.

Making sure doors are closed and windows are sealed is obvious, and goes a long way to keeping out mid- and high-frequency sounds – birdsong, sirens and so on. Distance also helps: if your neighbour likes to turn up the bass, getting as far away from the party wall as possible will help. And although in theory the attic is a great place to stick your studio, if it rains or gets overly windy, you'll be able to hear it through the roof.

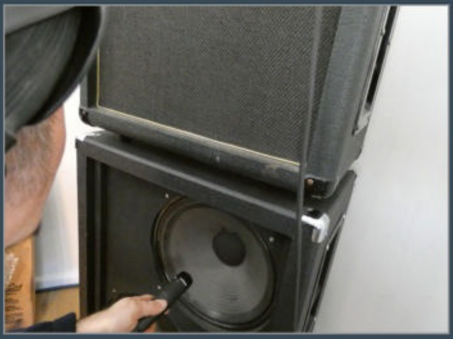
The next type of isolation concerns the sounds you make and how bothersome they are to your neighbours. Once again, keeping windows and doors closed helps, but consider the volume of amps and the time of day you choose to record, particularly if it's loud stuff like drums. Low frequencies in particular are very hard to contain.

Finally, you need to consider isolation within your recording space. This can be improved to an extent using directional mics (we'll get to that next), but beyond that, large screens can help divide a space up into zones, smaller screens (or furniture, at a pinch) can be used to 'box' away amps, and small 'reflexion'-style screens work well on individual mics. Finally, if you have big enough cupboards or are able to run cables from one room to another, this is often the best way to isolate individual instruments or performers.

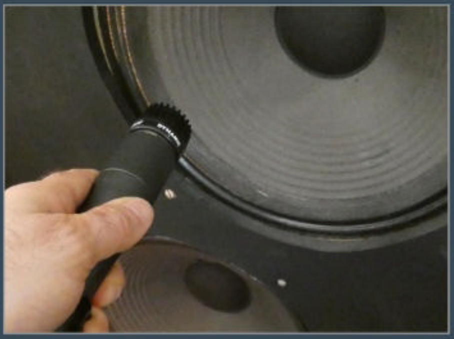
> Step by step

3. Single mic technique

1 > Recording with a single mic should be reasonably straightforward. The first job is to select a microphone based on its pickup pattern and suitability for the job. This could simply be a case of choosing something small or robust enough if it's going to be near drumsticks. Choose a cardioid or hypercardioid to help isolate an instrument from its surroundings.



2 > Next, use your ears to establish where the instrument's sound is coming from and position the mic accordingly. To find the sweet spot, get someone to move the mic as you listen on your monitors, or try listening via headphones as you move the mic yourself. Try right up close and gradually move away to establish a satisfactory representation.



3 > If the sound you're after isn't translating, and you're certain the instrument sounds good in itself, try a different mic, as each one has its own frequency response. Alternatively, if you're using a directional mic, try angling it slightly off axis to help make things less edgy.

Recording with one, two or more mics

Microphones are our electronic 'ears' in the recording process, but unfortunately, they don't hear things in quite the same way that our ears do, which is why we have to learn how to use them correctly.

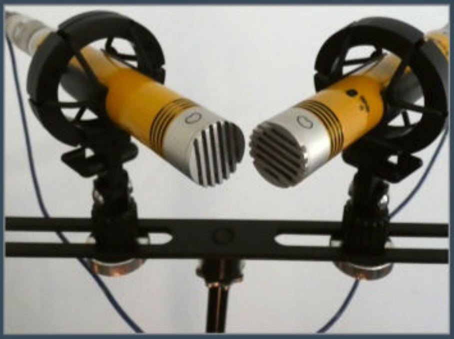
The most common method of miking something up is to use a single microphone. This will capture a combination of direct sound and room sound in a manner that's dictated by its pickup pattern and position in relation to the source – but it won't give us left/right stereo. In order to capture directional information, we need to record in stereo using two mics. There are various ways to do this, and two main options (see *Stereo mic techniques*, right) are the crossed (XY) pair and spaced (AB) pair. Other possibilities are the Blumlein pair, ORTF, mid-side and Decca tree. Each mic is recorded to an individual mono track, although you can use stereo tracks if you prefer.

The third method is to use multiple mic technique. This could be as simple as using two mics aimed at different parts of the instrument (not the same as stereo recording), or it could involve a combination of stereo miking and individual or 'spot' miking of specific parts of the instrument. Let's take a closer look at all three techniques...

> Step by step

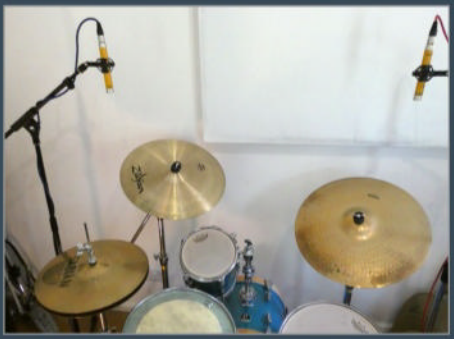
4. Stereo mic techniques

1 > To record in stereo, ideally you'll use a pair of matched microphones. These should not only be exactly the same model, but also very close in level output and frequency response. The most affordable options can often be small-capsule condensers.



2 > To set up a crossed (or XY) pair, use two cardioid mics with their capsules one above the other or adjacent. Set the angle between them to anywhere from 90 to 135 degrees, and point your two-mic rig towards the sound source (using a stereo bar to mount them keeps things simple). Match the gains of the two mics.

3 > For a spaced (or AB) pair, you can use any pickup pattern, but omnis give the most even spectral balance. Space them apart anywhere from 50cm up, according to distance from the sound source. Large spacing will give comb filtering when monoed, so listen for that. Ours is spaced by over a metre, just above the kit.



4 > When using spaced microphones, there are additional techniques to consider. Most common is the '3 to 1 rule', where the distance between two mics is at least three times the distance from the sound source. This is useful for single-point sources, but less with a drum kit, which has multiple spaced sound sources.

Multiple mic techniques

The most common application of multiple mic technique is recording the drum kit, and we can learn a lot from this. The technique combines mics at different distances from the kit, with overhead mics (often in a stereo configuration) providing a general picture, close-up 'spot' mics emphasising specific kit elements, and room mics (also often stereo) positioned at various distances to capture room ambience. A similar technique is used to record the orchestra, although the scale is larger and mic positioning is slightly different. In both cases, the thinking behind the technique is that it gives balancing flexibility. Sometimes, the mics are blended prior to recording, but usually, you'll simply record all the mics, then balance them later on.

Further multi-miking examples include guitar amps, pianos and even vocals. With a guitar amp, you can use separate mics to simultaneously capture different parts of the speaker cone or cabinet. With piano, traditional stereo techniques can be augmented by single spot mics. In both cases, distant mics can be added to capture room ambience.

There are a couple of downsides to using multiple mics. First, they require more tracks, mics and inputs, which makes the setup more complex. Second, when you blend two or more mics capturing the same sound, you get phase cancellation and comb filtering, as the soundwaves arrive at the mics at slightly different times. The effect can be subtle or lead to deep notches or boosts at some frequencies, and with the latter, inverting the phase of one mic or track solves the problem. Other solutions include balancing different mics so that one is clearly dominant, or using plugins like Sound Radix Pi, built specifically to control phase relationships. Ultimately, you're trying to make the mics sound the best they can, combined.

Multiple miking and room layout

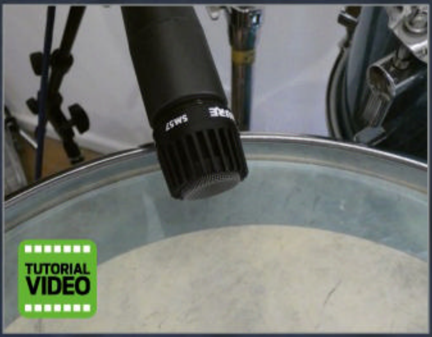
There are going to be times when you want to record multiple instruments at the same time in the same space, or record something in a compromised space. More than anything, these situations test your microphone choice and positioning skills.

The first rule is to be realistic. For example, it is possible to record drums on their own in a very small space, but you won't be able to get a decent ambient sound. And if you try to squeeze something loud like a guitar amp, or something quiet like an acoustic guitar, in alongside the drum kit, you're probably going to struggle. So think about the overall balance in the space and try to get that working first.

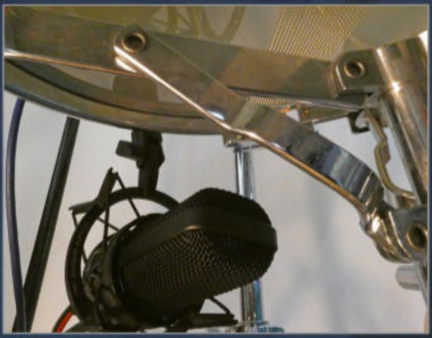
Next, use directional mics, thinking about not only the sound they pick up but also what they're rejecting, and use this to curtail the spill of each instrument into the other instruments' mics. Finally, if you have a bit more space, spread the instruments out and put up screens to isolate mics. In practice, the distance between the mics will actually create a more ambient result, so if you're after a tighter, less reverberant sound, it's best to keep everyone close, albeit at the expense of some isolation.

> Step by step

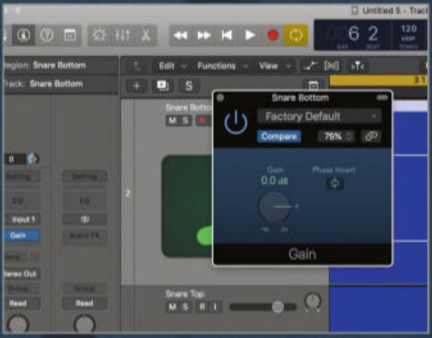
5. Simple multi-miking



1 > One of the simplest and most common uses of multi-miking technique is recording the snare drum. The idea behind using two mics is to capture the 'thwack' of the top (batter) head and the crack and buzz of the bottom (snare) head. Blended, these together provide you with a much brighter, crisper sound than just a single mic on the top head.



2 > Position the top mic a few centimetres above the rim, pointing towards the centre of the head. Common dynamic choices include the cardioid Shure SM57 and hypercardioid Beyerdynamic M201. Position the bottom mic 10cm below the drum, pointing at the snare. Here, we're using a condenser. If your mic has a level pad (-10dB or -20dB), switch it on.



3 > We've already touched on the subject of comb filtering with multiple mics, and miking a snare drum from opposite sides can easily cause this. Try inverting the phase of one mic to see if it delivers a more punchy end result.

Let's record!

Recording technique is pretty universal: choose a mic, position it, set the gain level and hit record. The nuances come in the form of tried and tested techniques for commonplace instruments, and taking these onboard will save you time. In the following walkthroughs we'll show you the basic techniques guaranteed to achieve reliable results every time, but there are also some general concepts to bear in mind.

First up, vocals. The human voice is incredibly dynamic, and singers who have been trained to project their voices can actually be quite a challenge to record. It's entirely possible for a loud singer to overload the mic capsule – particularly if it's a condenser – so don't be afraid to use your mic's level pad if available, and back the mic away from the singer.

At the other end of the spectrum, intimate close miked vocals can also cause problems, with plosives, proximity and sibilance all becoming more dominant. To save hassle later, use a foam wind protector and pop shield.

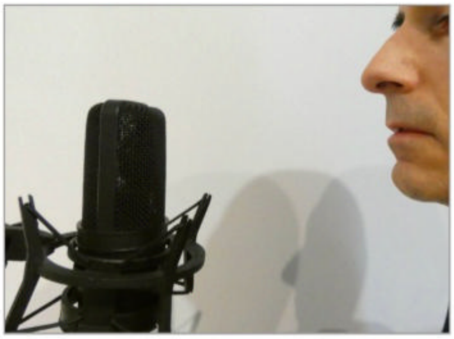
If your vocalist is too loud, use your mic's level pad to attenuate the input level

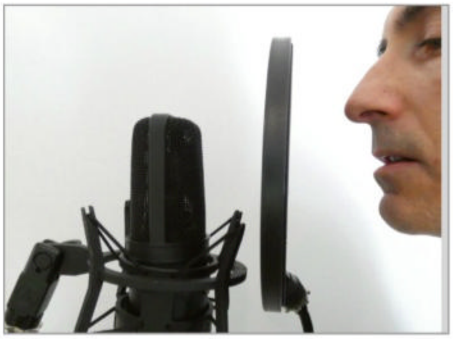
Acoustic guitars and amplified electric guitars call for very different approaches. Picked acoustic guitar can be very quiet, so not only does it call for more mic gain and, ideally, a condenser mic, but also a very quiet recording space. In contrast, electric guitar amp loudspeakers are pretty loud and the sound you normally 'hear' is the amp and room combined. Close miking a guitar amp speaker is great for a bright, edgy sound, but tiny mic changes can influence the sound greatly. For a more balanced picture, gradually move the mic back from the speakers until you're happy with what you hear.

With drums, try and get the kit sounding good in the room first. Then start with either a single (mono) mic or a stereo pair overhead. Adjust both the distance from and position over the kit to get a balance between kit and room, and when you're happy, add in close spot mics to enhance the kick, snare, toms and so on.

> Step by step

6. Recording vocals





GAIN
MIX
MONITOR

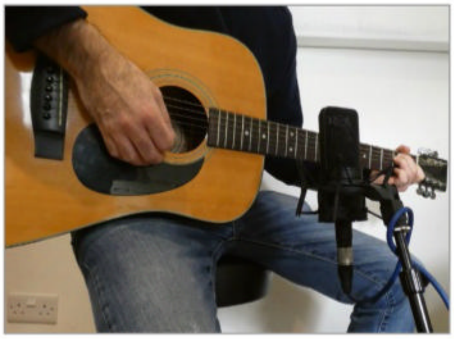
1 > The most reliable option for vocals is a cardioid condenser, with large capsule designs usually having the frequency response required for good results. Set the mic up about 20cm from the singer's mouth, pointing the on axis side at them (usually indicated by a logo or polar pattern label). If the mic has a low-cut filter, activate it to reduce floor rumble.

2 > You should be able to see the capsule through the grille. Position the mic so that they're singing into the capsule diaphragm, not the body. At about 20cm you should get a nice intimate sound and some extra low frequencies from the proximity effect. Put a pop shield equidistant between mic and mouth to reduce plosives.

3 > A decent headphone mix will have a huge impact on your singer's performance. In your monitor mix, focus on including a reliable pitch reference such as piano, and a clear rhythmic reference. Make sure they can hear themselves at an appropriate level – too quiet and they'll oversing; too loud and they'll undersing.

> Step by step

7. Recording acoustic guitar



1 > For acoustic guitar, use either a small or large capsule cardioid condenser. For a balanced sound, avoid the sound hole and instead aim the mic directly at the point where the neck joins the body. Start with the mic about 30cm away from the guitar.

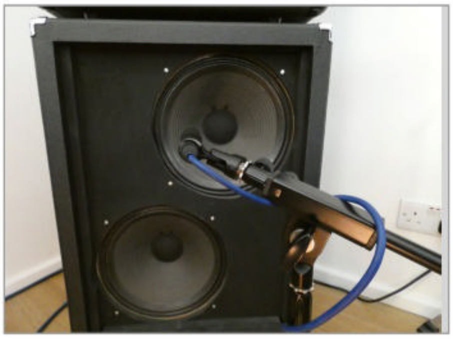
2 > Next, listen and decide on the tonal and room balance you're after. To adjust the amount of sound captured, move the mic nearer to or further from the guitar. At about a metre, you'll really notice the room. To adjust tonal balance, angle the mic up towards the low strings or down towards the high strings.

3 > The mic position on an acoustic – particularly close up – is very sensitive to changes, so encourage the guitarist not to move when playing, and try to capture all your takes in one go, as reseating in exactly the same position can be tricky. Encourage them not to make noises, too – jewellery, breathing and so on.

> Step by step

8. Recording electric guitar and bass

TUTORIAL
VIDEO



1 > For predictable guitar or bass amplifier recordings, use one dynamic or condenser mic. Popular options for guitar are dynamics such as the Shure SM57, which delivers an edgy, upfront sound. Popular for bass are large capsule condensers and bass-boosting dynamics such as the AKG D12.

2 > Choose a single speaker cone to mic up, and position the mic about 10cm from its front plane, pointing directly at the centre cap. Visualise a horizontal line across the cone. Move the mic from the centre cap to the edge of the cone to go from very bright and upfront to a mellower sound.

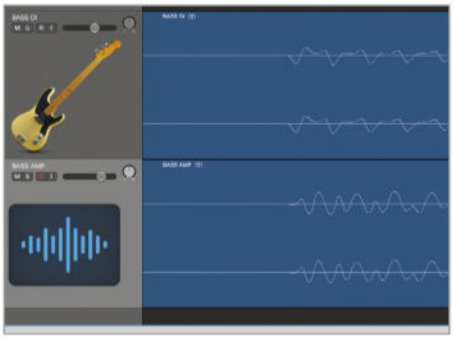
3 > Now find the right balance between the direct sound and the room sound by gradually moving the mic back away from the cone. As you do this, the horizontal mic position becomes less significant, but you'll eventually hit the sweet spot that delivers just the right amount of room.

> Step by step

9. DI: on its own and in addition

SmartDI
QUIK LOK

SmartDI
QUIK LOK



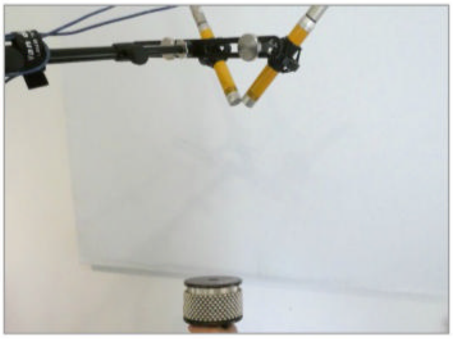
1 > Recording a DI signal at the same time as the amp gives you the option to reprocess the guitar sound from scratch using a plugin or different amp. In order to do it, you'll need to split the guitar sound at source, and for that you'll need a separate DI box.

2 > Plug the guitar into the DI input, then plug the DI 'through' jack into your guitar or bass amp. Use a regular mic cable to plug the XLR output into your audio interface's mic input. Record this DI input on a separate track alongside the mic input.

3 > You can use the DI on its own (fine for bass), reamp it using plugins or a real amp, or combine the DI and amp. If you choose to combine them, you may have to nudge the timing or phase invert the mic signal. Here, you can see the misaligned waveforms of our bass mic and amp.

> Step by step

10. General miking tips for any instrument



1 > First, decide whether the instrument concerned warrants mono or stereo recording. This decision will be based on the size of the instrument, how much it interacts with the space it's in and whether that space sounds any good, and whether you actually want a stereo or mono sound.

2 > Next, work out where the instrument's sound comes from by listening to it from different sides. Sometimes you may need to use more than one mic to capture all aspects of the sound, or, alternatively, record it from further away to achieve a better overall picture.

3 > Select a suitable mic for the job. For quiet sources or instruments with complex high frequencies, like percussion, strings and brass, use a condenser. For bolder sounds (like drums), use a dynamic. And for stereo, use a matched pair of condensers, large or small capsule.

Monitoring and cue mixes

When recording, it's important for your performers to be able to hear themselves, each other and the guide track or click they're playing to. In a live gig situation, this would be achieved with wedges and/or in-ear monitors. In a studio space, the same method can work, but it's easiest to opt for headphones or in-ear monitoring for everyone. This helps you get the cleanest recording, without sound from the monitors getting into the microphones.

Regular mixing desks are well designed to handle headphone mixes, either via auxiliary busses or dedicated cue mix busses, which is why they're popular for recording bands. This is called 'hardware monitoring', and the DAW (via a multichannel audio interface) is used simply as a multichannel recorder.

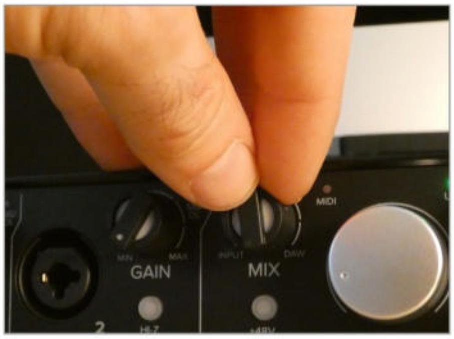
However, when it comes to recording into a computer DAW with a simpler setup and no desk, you have to find another way to achieve a headphone mix that combines the mic inputs and the track. Conveniently, many interfaces include hardware monitoring, either using a physical input/output balance control, or within the interface itself via a software-controlled hardware circuit.

> "It's important for your performers to be able to hear themselves"

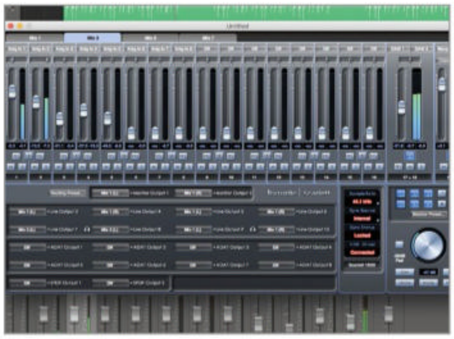
The first option is pretty basic, and is enough to enable the input mic or mics and the existing track or click playing back from the DAW to be heard. The second can – depending on interface – serve up multiple different mixes and route them to multiple headphone outputs.

Both of those options tap the input signal off before it reaches the computer, but monitoring via the DAW can also work if you set a very small buffer size (64 samples or less, ideally), so that the round trip delay (latency) added to the input signal isn't too off-putting. Be aware that a very short buffer size will tax your computer and can cause audio glitching. Also bear in mind that most vocalists will find any noticeable delay unworkable, and this is why hardware monitoring is always the better option.

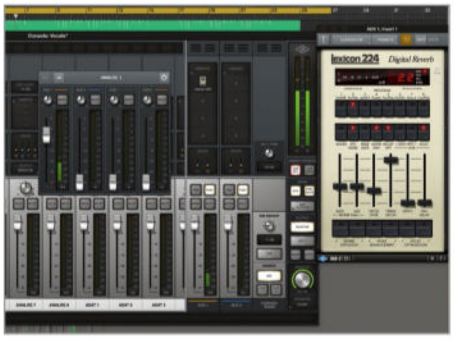
> Step by step 11. Hardware and software cue mixes


GAIN
MIX
MIN
MAX
INPUT
DAW
MIDI

1 > With a zero-latency balance control, setting up a cue mix is simple. Set your mic gain first, adjust the playback output level in your DAW, then adjust the balance control. Your interface might also have a 'mono/stereo' option for spreading or monoing the mic inputs.

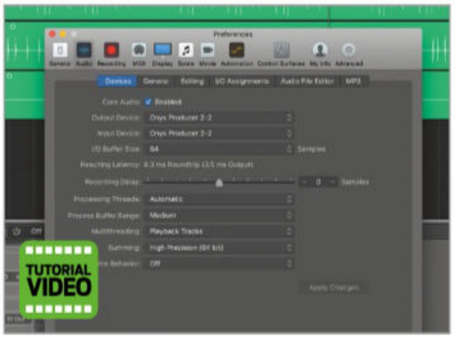


2 > With software-controlled hardware monitoring, we can create a headphone mix by balancing each of the inputs accordingly against the DAW's output. Remember, these are just monitoring levels, and although they are dependent on preamp gain, they can be set without affecting it, which is precisely what you want for a headphone mix.

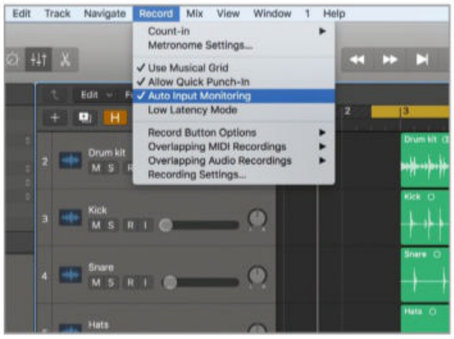

lexicon 224
Digital Reverb

3 > Some software-controlled hardware monitoring systems also incorporate DSP effects, and one of the most capable is Universal Audio's Apollo line of interfaces. Here, we've set up a mix of input sources and the DAW output, and incorporated a DSP reverb into the headphone cue mix – all without touching the host CPU.

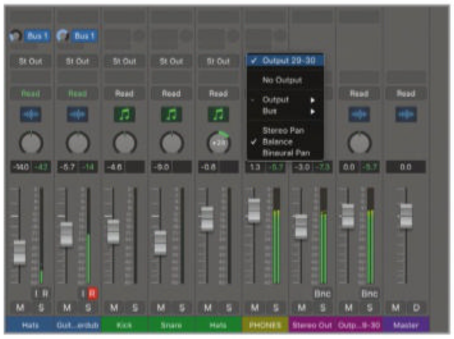
> Step by step 12. Software cue mixes and latency


Preferences
Devices
General
Editing
I/O Assignments
Audio File Editor
MP3
TUTORIAL VIDEO

1 > If you can set your audio interface to a small buffer size in your DAW, you can monitor via software, which has a couple of advantages over hardware. First, head to the audio driver settings and see how well each one works. Here we can see that with a buffer size of 64 samples we get a latency (input to output round trip delay) of 8.3ms.


Edit
Track
Navigate
Record
Mix
View
Window
1
Help
Count-in
Metronome Settings...
✓ Use Musical Grid
✓ Allow Quick Punch-In
✓ Auto Input Monitoring
Low Latency Mode
Record Button Options
Overlapping MIDI Recordings
Overlapping Audio Recordings
Recording Settings...
Drum Kit
Kick
Snare
Hats

2 > Software monitoring makes setting up for recording one step simpler, and enables dropping in on existing tracks. In your DAW, look for the 'auto input' (or similar) record monitoring option, then simply arm the track you want to record to. Hit play and you'll hear anything recorded on the track; hit record and you'll hear the input assigned to it.


Bus 1
St Out
Output 29-30
No Output
Output
Bus
Stereo Pan
Balance
Binaural Pan
Read
Kick
Snare
Hats
PHONES
Stereo Out
Master

3 > Software monitoring also makes it quite easy to create a separate headphone mix. Here, we've set aside an auxiliary input on our DAW for just this purpose. Use pre-fader sends to make the levels independent of the main monitor balance, then, if possible, route the bus to a separate main or headphone output on your interface.

Recording, overdubbing and multiple takes

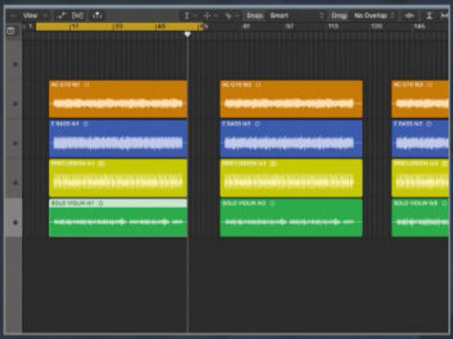
With your mics set up and cue mix monitoring sorted, you should have everything in place to start recording. You might be recording a song from scratch to a click track or reference beat, or adding live instrumentation to an existing track. Either way, this is the point at which it really pays to have an understanding of how your DAW handles tracks, overdubbing, alternative takes and all the rest of it, so you can keep everything organised. This might sound a bit on the unnecessary side if you're simply recording one track, but the unlimited track count found in many DAWs can result in an abundance of takes, and the more you record, the more you have to sift through later, so any streamlining features are surely welcome.

Different DAWs handle multiple takes and the ongoing compiling and editing of them in different ways. We'll be looking at compiling on the next page, but first, let's consider how they might handle a few takes.

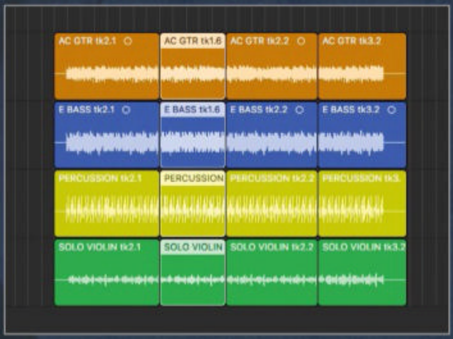
Let's say you're recording a song from scratch. You're recording to a number of individual tracks and want to do a number of takes. The obvious method is to record one take after the other sequentially in the arrangement window. You can see the takes laid out in front of you, and you can edit sections together for a master take if required. It's a universal approach that does the job. However, some DAWs provide a virtual layer system that lets you stack takes on top of each other. Returning to our initial example, as long as you record the takes to a click and start at the same position on the timeline, this should be a more elegant solution. Plus, if you want to spin through and change your initial master take, even after you've continued overdubbing onto it, you can.

> Step by step

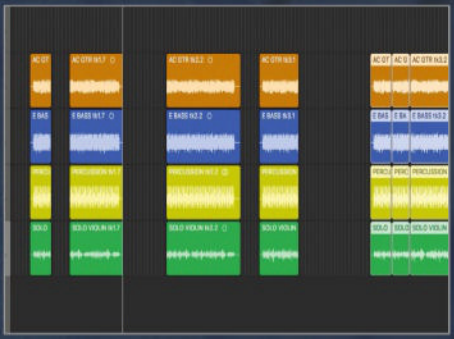
13. Handling multiple takes: the universal method



1 > This method will work in any DAW and requires no specific features. Start by recording a few multitrack takes one after the other. Ideally record to a click or timing reference, as it'll help when editing multiple takes together. The method will still work without a click, but joining takes will be less predictable.


AC GTR tk2.1
AC GTR tk1.6
AC GTR tk2.2
AC GTR tk3.2
E BASS tk2.1
E BASS tk1.6
E BASS tk2.2
E BASS tk3.2
PERCUSSION tk2.1
PERCUSSION
PERCUSSION tk2.2
PERCUSSION tk3.
SOLO VIOLIN tk2.1
SOLO VIOLIN
SOLO VIOLIN tk2.2
SOLO VIOLIN tk3.2

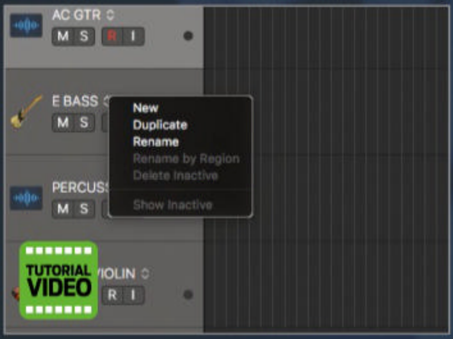
2 > Play through the takes, highlighting and separating the sections that you like. Ideally, group the tracks so you can edit them collectively. If one of the takes stands out as a good one, use it as the master, then simply copy over sections from other takes to create your final track.



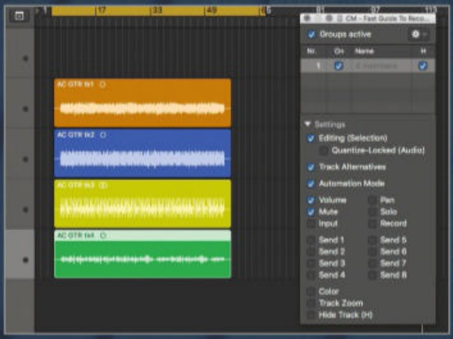
3 > Alternatively, grab the sections you want and move them to a separate section on the timeline. This works well when the takes have been recorded with looser timing. Finish up by checking the edit points. You're now ready to overdub additional instruments on new tracks.

> Step by step

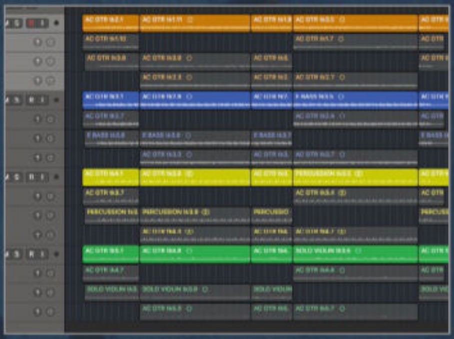
14. Handling multiple takes: the 'alternatives' method


AC GTR
M S R I
E BASS
M S
New
Duplicate
Rename
Rename by Region
Delete Inactive
Show Inactive
PERCUSS
M S
TUTORIAL VIDEO
IOLIN
R I

1 > The other form of take handling goes by different names in different DAWs, but the idea is the same. In Logic Pro X it's called 'Alternatives' and you can activate it at any time by selecting **Show Track Alternatives**. You'll see each track now has an **Alternatives** sub menu where you can select, create and delete alternatives.


AC GTR tk1
AC GTR tk2
AC GTR tk3
AC GTR tk4
Groups active
Settings
Editing (Selection)
Quantize-Locked (Audio)
Track Alternatives
Automation Mode
Volume
Pan
Mute
Solo
Input
Record
Send 1
Send 2
Send 3
Send 4
Send 5
Send 6
Send 7
Send 8
Color
Track Zoom
Hide Track (H)

2 > Start by recording a multitrack take, then set up a group for the recorded tracks and make sure the group editing options include alternatives. Now select a new alternative. You'll see the tracks are cleared and an alternative has been created for each of the grouped tracks. You're ready to do a new multitrack take.



3 > Repeat this step for each new take, then use the **Show Inactive** option to view all takes together. Listen to each take, editing the sections you want to use, then move them onto a fresh alternatives track. Hide the inactive tracks and adjust or crossfade the section joins so that they sound natural.

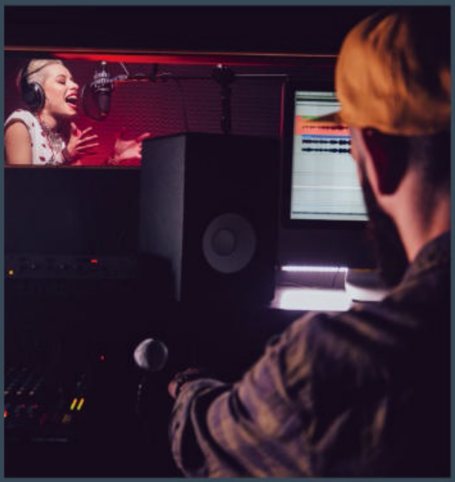
Comping

Although it's nice to think we can capture an awesome performance in one take, recorded music is, of course, subjected to extensive repeat listening. This reveals imperfections that we'd probably ignore or simply not notice in a one-off live performance, and puts us under pressure to capture the best performance possible, without any sloppy timing or tuning. We've already looked at how to deal with a handful of multitrack takes – now let's step things up a level and look at some more intensive overdubbing and comping options.

Once again, there's a particular universal method that will work in any DAW. Here, the key is to set up lots of identical tracks, moving from one to the next as you record successive takes. With this technique, there's no attempt to punch in on existing tracks. You simply overdub a bunch of takes and then go back over them, cutting out the sections you want and compiling them on a new track.

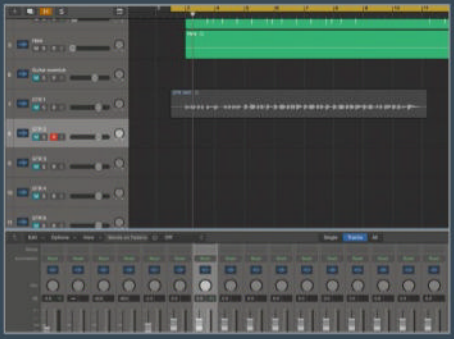
The second, more DAW-specific method typically works by recording in cycle mode. You can either work on sections of the song or the whole thing, but either way, what you'll end up with is your overdub takes as virtual tracks or layers on a single DAW track. These can then be viewed together with a master track at the top. By highlighting the sections you want to hear, you create the compiled take.

Every DAW has its own name for this (Swipe Comping in Logic Pro X), and it's certainly much quicker than the universal method given above. What's more, until you render the final edit, it's usually possible for you to go back and make changes. With the comp sorted, you can then do any further editing, which includes timing and tuning tweaks.

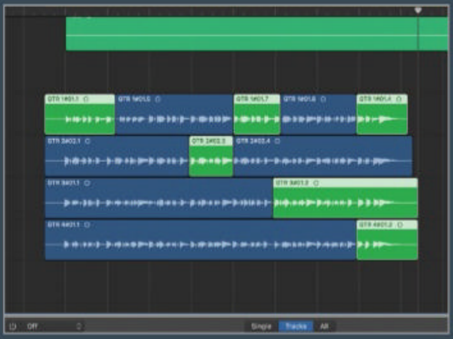


> Step by step

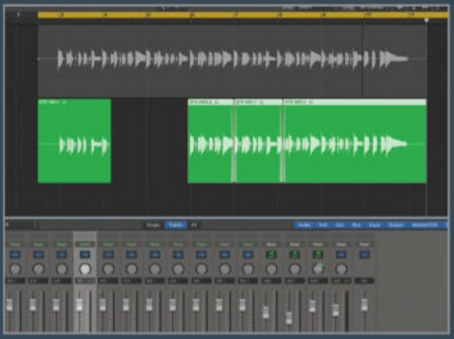
15. Comping: the universal method



1 > Start by making up a set of empty tracks, ensuring that your desired input is routed to each one. Play through the section you want to overdub and record one take. Mute the track you've just recorded – as you don't want to hear it yet – and move on to the next blank track.



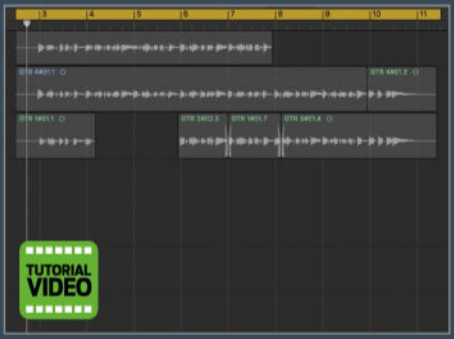
2 > Repeat this process until you have enough takes, then listen back to them one at a time. As you do so, divide each take into sections to separate the bits you think are good enough. Colour coding them can be helpful and also indicates the sections you don't have covered yet.



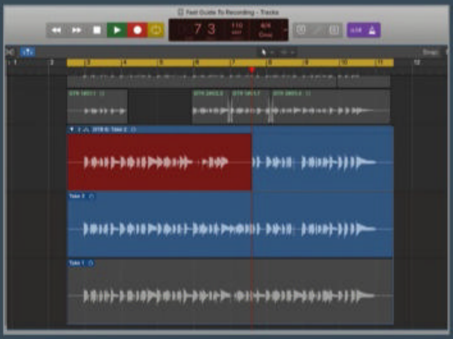
3 > Move sections to a new track to create your compiled master. This takes trial and error as some sections will work better together than others. If you don't have all the sections needed, return to step 1 and record more takes. When happy, tidy up the joins and apply crossfades.

> Step by step

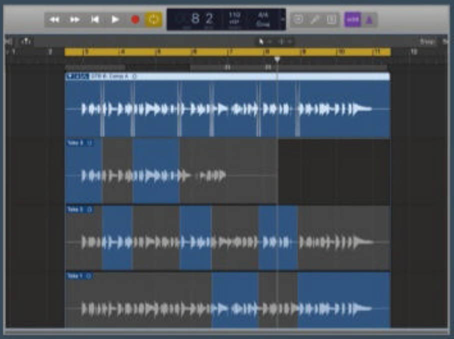
16. Comping: the cycle method



1 > Each DAW has its own approach to this, but common to most is the requirement to work on a cycled section of the track. First, set up loop points and select a track to record. Remember, with this technique you only need to set up one track, which saves time.



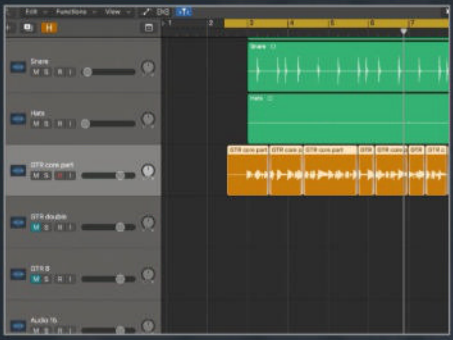
2 > Hit record and cycle round the same section, capturing a few takes. Here we're using Logic Pro X, with which you can watch the takes stack up one after the other with each cycle. Each take is numbered and the most recent take is at the top of the list.



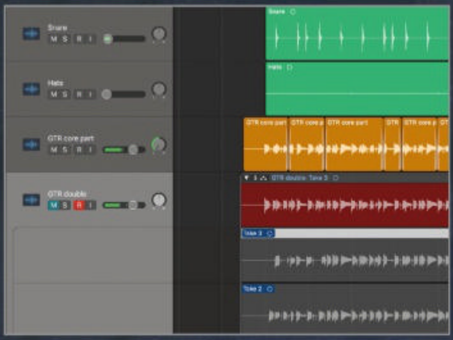
3 > When you have enough takes, stop recording and listen back to each one. Then, in Logic Pro X, you simply select – or 'swipe' – the sections you want to hear. As you do this, the master track at the top reflects the contiguous sections you've chosen. Finally, we export to a new track.

> Step by step

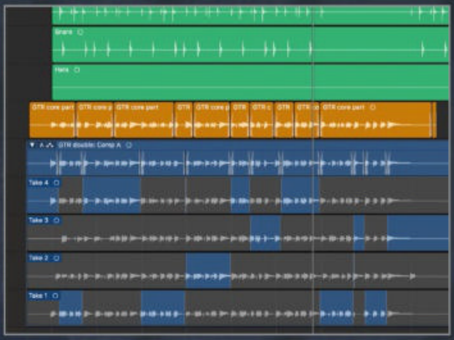
17. Double tracking



1 > The key to a decent double or triple track is having a good original core take. Let's assume that yours has been recorded, compiled and edited brilliantly (of course it has!), so that it provides a perfectly in-time and in-tune reference.



2 > Your goal is to get the double track as close as possible to the core take, and usually the best way to do this is to perform along to it. However, sometimes it can be hard to differentiate the core take from the double. Try panning the original take to one side in the cue mix to clearly separate it from the double track.



3 > You may need to do a number of takes and compile your double track using the techniques on the previous page. However, some looseness in pitch and timing adds richness. It can be tempting to use automatic tuning plugins on your double and triple tracks, but be careful if you do, as the result can sound artificial.

Tracking tactics

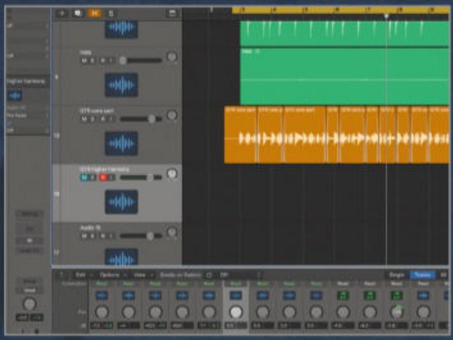
Our final recording technique involves layering multiple takes to create a thicker, richer sound. 'Double tracking' (or 'triple tracking', and so on) is an established production technique that dates back to the early days of three- and four-track recording, though it's considerably easier these days using the cut and paste capabilities of DAWs. It simply involves recording the same part multiple times, then playing them all back together – the natural differences between each take add up to create a big, lush sound.

First, you need to establish a reference. Typically, double or triple tracks work to support an existing track, so before you try to add layers, make sure your core track is good enough to support them. Second, when adding double or triple tracks, have the main track up as a reference, so that the musician can perform to it and check that it works. You'll probably need to compile and edit the layers, but as they're being used in a supporting role, they don't need to be as accurate as the main track in terms of pitch and timing. You can use layers in mono or spread them in stereo.

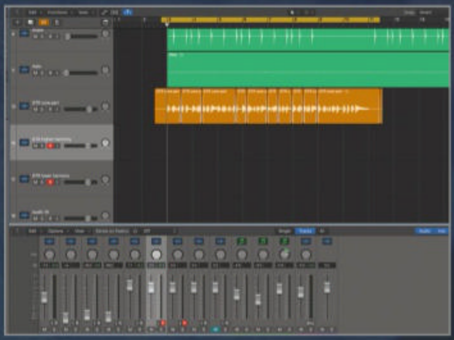
Finally, you should consider using layers of harmonies. Although these are most commonly used for vocals, pretty much any melodic instrument can be double/triple tracked as a harmony.

> Step by step

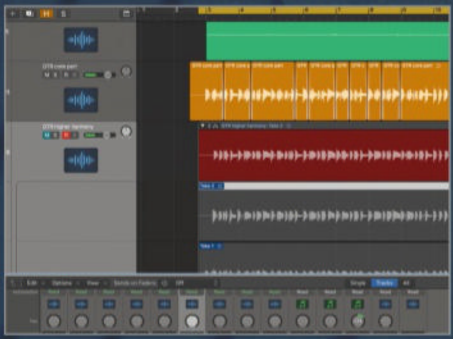
18. Recording harmonies



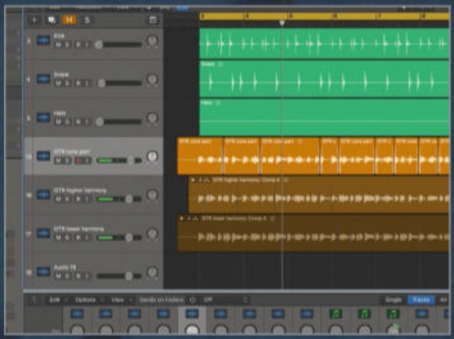
1 > Although we typically associate harmonising with vocals, any melodic part is fair game, and the techniques involved are similar. Much like double tracking, the first thing to do is to make sure your core melody part is compiled and edited well, and in time and in tune.



2 > Decide which musical parts to add. They could be above or below the main melody and will need to follow the chord changes in the song. Also decide if you want to fully harmonise the melody – quite unusual – or add harmonies to specific phrases, which is more typical.



3 > Set up the cue mix so that you can hear both the harmony you're adding and the core melody. This not only helps with timing, but also reveals straight away if the harmony is going to work both against the melody and in the context of the song.



4 > Finally, you'll probably have to follow the same compiling technique you used for the core melody. Harmonies usually play a supporting role, with their levels balanced below the main melody. Checking them in context will make the editing and compiling task quicker.

12 tips for better recordings

When recording vocals, minimise mic bleed by tracking with closed-back headphones

HEADPHONE BLEED

Headphone bleed is the cue mix from the performer's headphones being picked up by the mic. To avoid it, use a pair of headphones that are fully enclosed and set your monitoring level carefully, avoiding loud volume when recording quiet tracks.

TUNING

Multitracking and overdubbing instruments separately means you're unlikely to tune them together, so use your DAW's tuner (or a hardware one) as a reference. It's perfectly acceptable to check instrument tuning between takes. If in doubt, listen back with the musician or singer pinpointing problem areas, then fix them.

ENCOURAGE 'PERFORMANCE'

Your DAW has plenty of options for tweaking and correcting timing and tuning, but it can't create a performance. When recording, focus on getting a delivery that suits the music that you're producing.

POP SHIELDS

Close miking of singers often results in unpleasant pops caused by plosives. Placing a pop shield between the singer and the mic, a few centimetres from the capsule, should reduce or completely remove this problem, saving you a lot of time fixing problems later on.

BACK UP REGULARLY

Unlike plugins and samples, you can't just reinstall your prized recordings, and although complete hard drive failures are rare, when they do happen it can be soul destroying. Use an extra hard drive or cloud-based system to regularly back up your work.

HEADPHONE MIX

Getting headphone mixes right can be difficult with studio monitors. Grab a pair of headphones yourself and listen as you adjust the mix – you might be surprised at how much even tiny changes influence things.

WD
My Book
for Mac

Back up regularly across several hard drives and cloud platforms to prevent the loss of vital audio data

MAXED-OUT SESSIONS

It's easy to overload your computer with multiple plugins, grinding your DAW to a halt when you then decide to do some overdubs. As a workaround, bounce a stereo mix of the track, using a fresh session to overdub, then simply drag or import the new recordings into your main session.

BE SURE OF WHAT YOU'RE MONITORING

If you're recording straight to your DAW and monitoring the signal direct from your audio interface before it reaches the computer, it's always worth double checking that everything is working as it should be. Do a quick test record and playback before you start capturing proper takes.

SOUND FIRST, MIC SECOND

There's little point trying to record something that doesn't sound the way you want it to, and no amount of great mic technique is going to change that. Get the instruments sounding good in the room first, then perfect the mic choice and positioning.

DON'T RECORD WITH EFFECTS

In most cases, you'll be looking to add and – most importantly – adjust effects levels (reverb, delay, etc) when you mix your track, so unless you're absolutely sure about the effects (and even then, why commit unnecessarily?), record your original sounds dry.

BEATS FIRST

Most tracks are built on rhythmic foundations, and you've got to start somewhere. So, if you're building by overdubbing, get some beats or drums down first. This gives the other players something 'real' to play to, rather than just a click, which will very much help to shape the feel of the track.

COMPUTER STUDIO

If you record in the same room as your computer, hard drives and fans add to the general ambient noise. Record away from these noise sources, positioning a directional mic so that its rejection node points at the noise source.

A pop shield will help reduce or remove annoying plosives from your vocal recordings

/6 Of The Best...

Microphones

Now we’ve covered recording, let’s take a look at some of the best budget microphones to capture those perfect takes, all according to top music production website musicradar.com

Shure SM58

£92

shure.com

And no ‘best mic roundup’ is complete without the ‚other’ Shure, the SM58 being as ubiquitous for vocal recording as the ‘57 is for capturing everything else. In short you can record your singing in any studio or stage situation and the 58 will capture it perfectly.

Musicradar verdict: The Shure SM58 is the vocal equivalent of the SM57, and features the same tough construction and reliability but with a slight tweak in its frequency response meaning it enhances mid and upper frequencies to let your voice sing, so to speak. SM58s excel in the live arena, where their ruggedness means they can survive all manner of abuse and still sound as good as the day you got it.

sE Electronics sE7

£85

seelectronics.com

When using some microphones you might choose a model based on its ability to color the recorded sound with its own character – very often expensive microphones are known to add a certain ‘sound’. Or, you might want to simply capture the pure sound of the instrument, which is where microphones like this sE Electronics model come in.

Musicradar verdict: It could be cymbals, or acoustic guitar strings, or anything where you’re not looking to colour a sound too much at the point of recording. The SE Electronics sE7 is an ideal choice here, where the small diaphragm makes for a neutral, balanced sound that lets the instrument shine.

AKG P120

£74

akg.com

Sometimes you just need one good solid all-round microphone to capture a decent range of source instruments well. AKG is a well-respected brand in the mic world, so you know you’re getting quality across both the construction and the sound.

Musicradar verdict: If you’re on a budget but need a versatile, well-made mic that can work equally well across a range of applications then the AKG P120 might just be perfect. As a jack-of-all-trades condenser, the P120 is at home recording vocals, instruments and other sources and provides a balanced, clear sound.

Shure SM57

£86

shure.com

The SM57 is probably the most widely-used microphone out there, having been used on countless recordings and in many live shows over the last three decades. The great news is that it is still widely available and at a great price.

Musicradar verdict: The SM57 excels in pretty much any situation. The tight pickup pattern means it receives sound only from one direction and rejects it from immediately around it. Hence, they’re great for snare drums or guitar amplifiers, or anything where you need to capture a specific source. Simply point it and forget it. Happy days.

MXL 990

£89

mxlmics.com

If you want to record acoustic instruments – guitars, pianos and so on – the best type of microphone to pick up all the detail is a condenser microphone. And if you have a larger diaphragm model, then even better,

Musicradar verdict: It excels at this, where the extra precision helps you capture accurate, rich tones in a way dynamic mics can’t. The MXL 990’s large diaphragm ensures the captured sounds have colour and flavour which, for the price tag, are hard to beat.

Aston Element

£159

astonmics.com

The Element is what is called a ‘hybrid’ microphone, effectively allowing you to capture all the best bits of other microphone types, so you get great detail, a fabulous bass response and a natural sound. It was also designed by listening tests with over 4,000 volunteers helping to shape its final sound.

Musicradar verdict: Aston have designed it to be very robust, with exceptional ambient rejection, so Element will be equally at home in live vocal applications.

BASSLINE

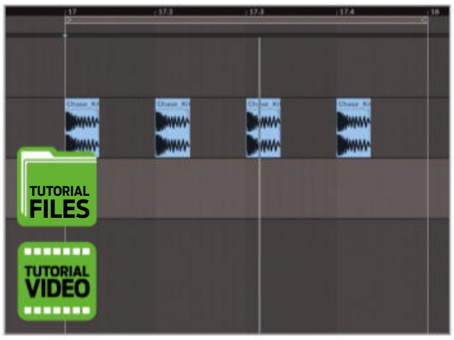
> Bassline music (also known as bass house) has been storming clubs and festivals worldwide over the last few years, with artists such as Holy Goof, Chris Lorenzo and Skepsis making music based on the classic sound of bassline tracks from the mid to late 2000s.

Their technique is to then add their own twist, taking influence from production methods and sounds used in styles ranging from rave, techno and grime through to jungle and DnB. Bassline tracks are produced with the dancefloor squarely in mind, boasting EDM-style drops, weighty sub bass, extreme mid-range and detuned mid synth leads, all creating a sound that can be intentionally abrasive but never fails to cut through in the rave. As the original bassline sound itself took inspiration from speed garage and uplifting vocal house there are strong influences in today's bass tracks from those styles, both in terms of the tempo which usually sits between 128-140bpm, and the energetic 4/4 drum beat.

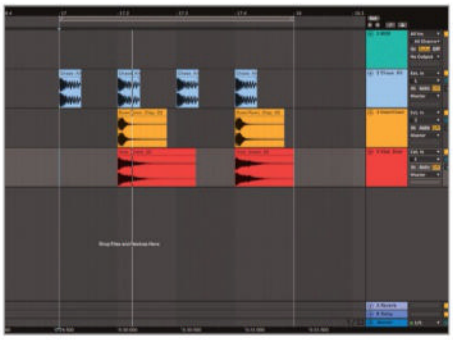
If you fancy making your own bassline track, then we've got your back with our guide on how to produce one here using just your DAW, the cm Plugin Suite and samples from the Beginners Guide To Music Production folder at filesilo.co.uk (under Bookazines). We'll run through drum-making techniques, mid-range bass synthesis, arrangement ideas and all the other cool stuff you need to make your own bassline track. Videos and tutorial files are also available in the folder at filesilo.co.uk.

>Step by step

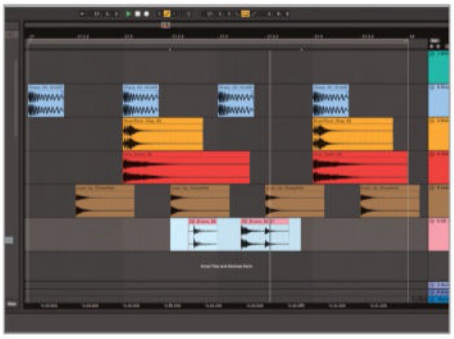
1. Bassline in 60 minutes


Chase_Ki
Chase_Ki
Chase_Ki
Chase_Ki
TUTORIAL FILES
TUTORIAL VIDEO

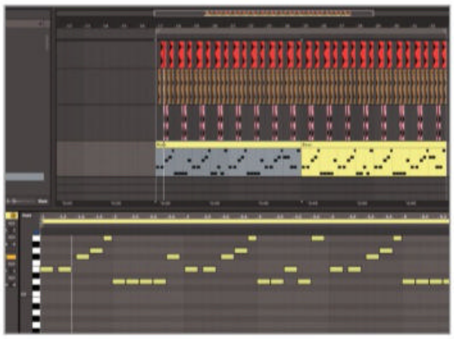
1 > Let's get started by making the drop for the track. Set your BPM to 130, and grab Chase_Kit_Kick09.wav from the samples Bassline folder; this is a beefy kick we can use for building our drums. Add it to an audio track then shorten the tail slightly, with a fade out to avoid any clicks or pops. Duplicate the kick sample, so it's placed on every beat of the bar.



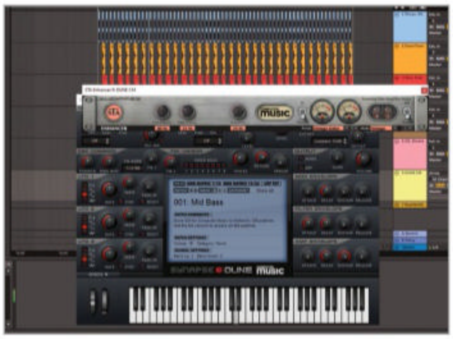
2 > We'll turn the kick down to -6dB to avoid clipping. Next, we'll build a layered clap and snare to go on beats 2 and 4 in the bar. Add DownTown_Clap_02.wav from the Bassline folder, then turn it down to -10dB so it doesn't dominate the kick. Import Vice_Snare_09.wav from the same folder to layer with the clap; turning it down substantially gels the two layers.



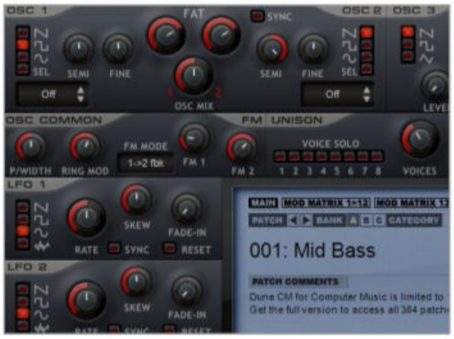
3 > Some percussion will flesh out the kick and snare. We'll place a hi-hat from the Bassline folder (Load_Up_ClosedHat.wav) on every off beat, then turn it down to -6dB. Import a drum machine loop from the folder (CD_Drums_95-17.wav) onto a new track. We'll delete most of the loop, so that just a cool shuffle between the snare hits remains.



4 > Turn down the shuffle we've just added, so it is just a subtle part of the mix. Next, we'll stretch the one-bar drum loop out into a 16-bar section. Now add some synths with Synapse's Dune CM on a new MIDI track. From the tutorial folder at filesolo.co.uk Load Mid Bass.fxp – a bass patch we've pre-made – and add Bass.mid onto the MIDI track, to trigger it.


STA
music
001: Mid Bass
SYNAPSE DUNE music

5 > To give the bass real power, we add a booming sub bass courtesy of u-he Bazille CM's Psy Subs preset. Turn down mid and sub basses to -9dB, so they don't sit in front of the drums. Add Audiffex STA Enhancer CM to the mid bass, with the Vintage XCiter preset loaded – this adds density, and harmonic excitement to our synth patch without going too crunchy.


OSC 1
FAT
SYNC
OSC 2
OSC 3
SEL
SEMI
FINE
Off
OSC MIX
OSC COMMON
FM
UNISON
P/WIDTH
RING MOD
FM MODE
1->2 fbk
FM 1
FM 2
VOICE SOLO
VOICES
LFO 1
RATE
SKEW
SYNC
FADE-IN
RESET
LFO 2
MAIN
MOD MATRIX 1-12
MOD MATRIX 13
PATCH
BANK
CATEGORY
001: Mid Bass
PATCH COMMENTS
Dune CM for Computer Music is limited to
Get the full version to access all 384 patch

6 > Let's make a variation on the bass, to use as a fill. Duplicate the Mid bass channel, then delete the MIDI clips. Move the last bar of MIDI to the duplicate channel, so the new synth is triggered at the end of the phrase. Open Dune CM, and change Osc 2's waveform to sawtooth, with the FM 1 dial at 20%. This makes our patch change to a more ringy sound.

RECOMMENDED LISTENING

SKEPSIS
GOES LIKE

SKEPSIS - *GOES LIKE*
One of bass music's biggest tracks in recent years, the mid bass in *Goes Like* is so sharp that it could cut titanium, while thumping drums keep the track moving along.

▶ bit.ly/skpss_glt

DARKZY - *IT'S YOU*
Trance-tinged vocals and pads kick this off, into a savage drop that combines screeching bass and weighty drums. Undoubtedly one of Darkzy's best bassline tracks to date.

▶ bit.ly/dkz_iy

DRAKE - GOD'S PLAN
HOLY GOOF
(BOOTLEG)

DRAKE - *GOD'S PLAN (HOLY GOOF BOOTLEG)*
This took Drake's hit and turned it into a massive, bass-heavy banger by adding in some huge synths, fat drums and lashing after lashing of sound effects.

▶ bit.ly/drk_gp_hg

WEEKEND BOYS

BRU-C FT WINDOW KID, JAMIE DUGGAN AND BOODA - *WEEKEND BOYS*
The original Niche vibe is bang up to date for this, with witty vocals from MCs Bru-C and Window Kid the track's main focal point.

▶ bit.ly/brcwndwkd

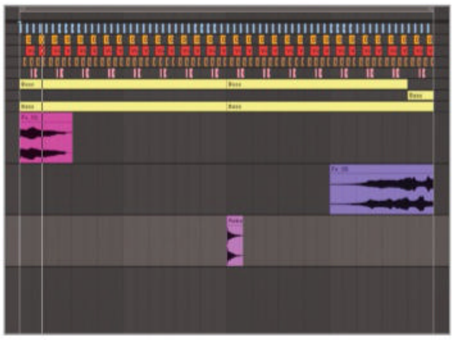
PRO TIPS

ALL IN THE TIMING

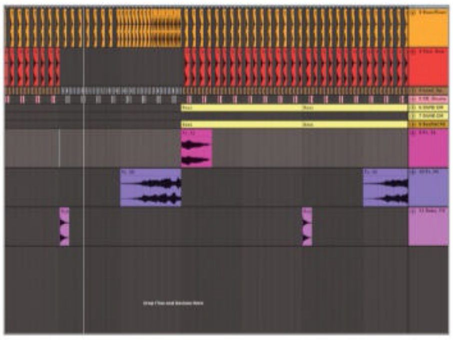
You can change the feel of your drums quite dramatically by using your DAW's channel time delay on various layers. This lets you make subtle timing changes by shifting sounds ahead, or behind the grid by milliseconds at a time. For example, try time delay to shift the offbeat hi-hat 5ms ahead of the grid to give a more urgent feel. Time delay is also great for shifting snare/clap layers to make them gel.

THINLY SPREAD

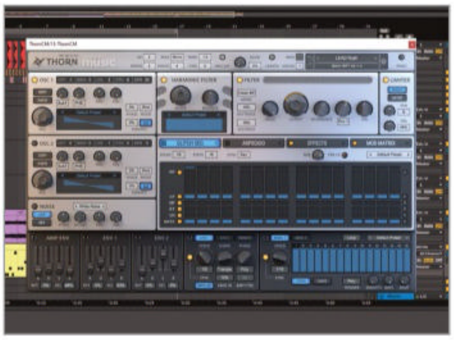
The kind of complex synth lead and bass sounds used in bassline (and many other dance styles for that matter) are often synthesised using unison detuning, alongside effects like reverb or stereo excitement. This can sometimes impact on their mono compatibility, which is not ideal for club PA, or smartphone playback. To get around this, try adding extra mono weight by mixing in mono saturation or distortion of your synth parts on a return channel...



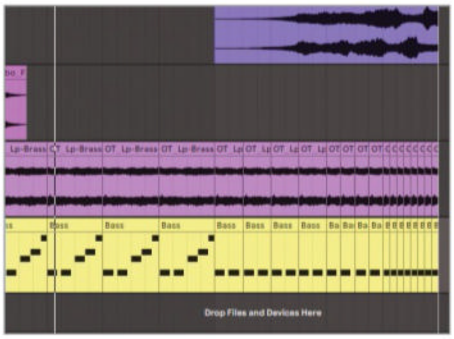
7 > We'll add a few one-shot sound effects to flesh out the arrangement. Grab Fx_01.wav from the samples Bassline folder, and place it at the start. We'll also take Fx_05.wav from the same folder. Place the effect on the last four bars, then reverse it to turn it into a fantastic riser. A final effect (Robo_FX_01.wav) placed on the second eight bars adds extra detail.



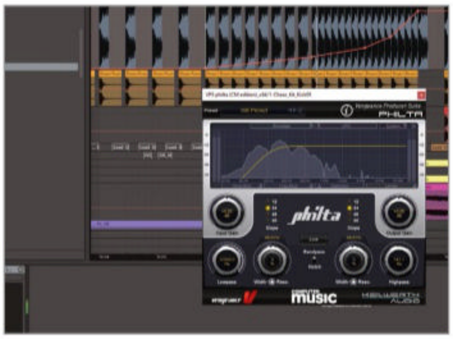
8 > Turn down the effect channels to -18dB, so they are pushed back in the mix. Copy the drums and effects across to the previous 16 bars, so we can use them to build the intro. Mute the kick during the intro's first eight bars, and the percussion for the second eight-bar part. Duplicate the clap so it plays over the kick, before doubling up for the last four bars.



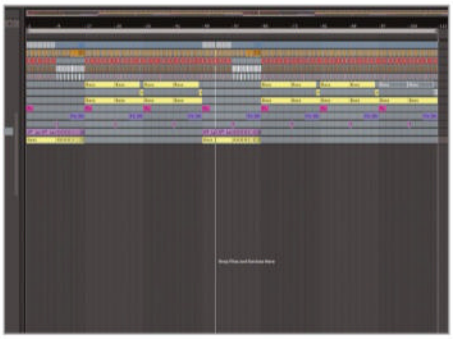
9 > Let's add some musical elements to the intro, starting with brass. Grab the OT_Lp-Brass-E3.wav sample and duplicate it across the intro. Turn it down to -6dB. Next, we'll make an intro riff from the bass notes. Add Dmitry Sches' ThornCM onto a new MIDI track, then duplicate the bass MIDI across. Use the LEAD Rush preset, as it complements our intro perfectly.



10 > We'll turn down ThornCM's channel to -7dB to retain a nice mix balance. Next, select the first bar of the brass and lead regions and copy them across the second eight bars of intro. This adds momentum to the build up, and we can embellish this even more by making the brass and lead loops repeat more quickly during the last four bars of intro, similar to a kick roll.



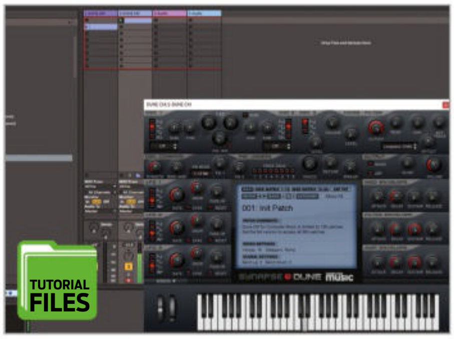
11 > Select the kick drums for the last two bars of the intro, then double them up. We'll double up the kick again for the last bar, creating a classic roll. Now, we'll high-pass filter the kick drum out before the drop using Vengeance VPS Philta CM. Add the plugin, and draw in some automation so that the kick's bass disappears before the drop, before snapping back in.



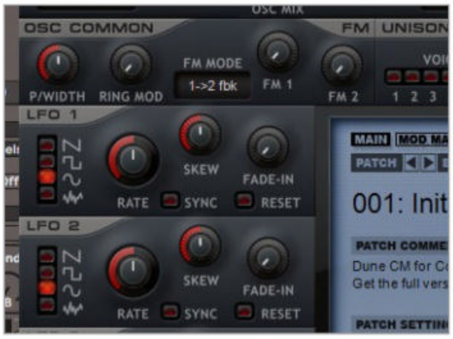
12 > To finish, we'll flesh the track out into a larger arrangement. Duplicate the 16-bar drop, then place the entire intro after it so we've got an intro, drop and breakdown. We'll then select the full drop, and copy it after the breakdown. We'll duplicate the last 16 bars of the second drop, then mute the mid bass so it's more of a cooled-off section to finish on.

> Step by step

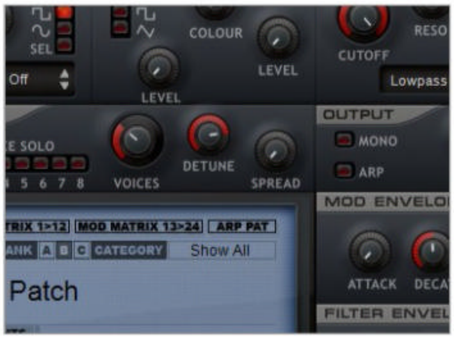
2. Mid-bass synth using Dune CM


TUTORIAL
FILES
001: Init Patch
SYNAPSE DUNE music

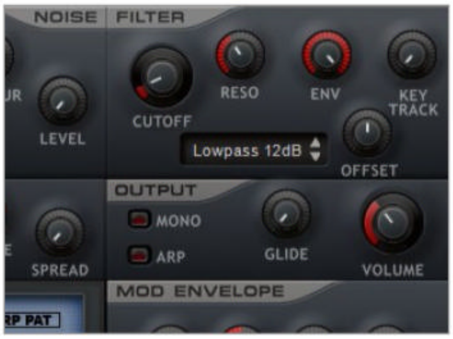
1 > Making a detuned, abrasive mid synth patch is a doddle with Synapse's fantastic Dune CM. Load the Init preset from Bank B to reset the synth. Set both Oscillator 1 and 2 to a square wave, for richer harmonics. Setting the OscMix to 50% brings Oscillator 2 into the mix.


OSC MIX
OSC COMMON
FM
UNISON
P/WIDTH
RING MOD
FM MODE
1->2 fbk
FM 1
FM 2
LFO 1
SKEW
FADE-IN
RATE
SYNC
RESET
LFO 2
MAIN
PATCH
001: Init
PATCH COMME
Dune CM for C
Get the full vers
PATCH SETTIN

2 > Beef up our sound by pushing Oscillator 1 and 2's Fat dials to 70%. Increasing the Ring Mod amount to about 60% adds a high pitched overtone. Now, when we adjust FM 2 to 66%, Oscillator 1 will modulate the frequency of Oscillator 2, resulting in a wobbly bass tone.


SEL
Off
COLOUR
LEVEL
CUTOFF
RESO
Lowpass
OUTPUT
MONO
ARP
E SOLO
VOICES
DETUNE
SPREAD
MOD ENVELO
ATTACK
DECA
TRIX 1>12
MOD MATRIX 13>24
ARP PAT
ANK A B C
CATEGORY
Show All
Patch
FILTER ENVEL

3 > Adding detuning will make our sound more abrasive. Set the Unison voices to 3, and Detune amount to around 80%. Tune Oscillator 2 up by three octaves, so the synth sounds more piercing. Set the Filter Env to 100%, so we can modulate the filter with the onboard filter envelope.


NOISE
FILTER
LEVEL
CUTOFF
RESO
ENV
KEY TRACK
Lowpass 12dB
OFFSET
OUTPUT
MONO
ARP
SPREAD
GLIDE
VOLUME
MOD ENVELOPE
RP PAT

4 > Reduce the Filter cutoff to 10%. Setting the Filter Envelope for a medium attack and decay, with fastest sustain and release, opens and closes the filter quickly when a note is played for that authentic bassline sound. To finish, increase the filter's resonance to around 40% for a sharper sound.

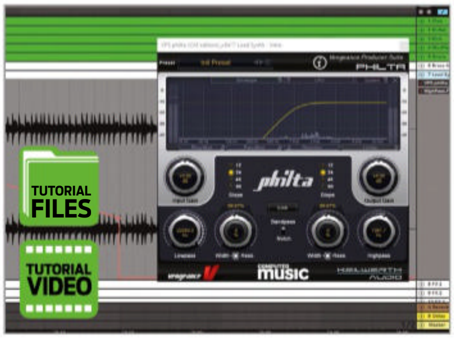
Arrangement hacks

When arranging, it's always good to go the extra mile and put your stamp on it. You can do this in lots of ways, including by using automation. For example, you could low-pass filter your drums during the intro so the high frequencies gradually fade in, adding a level of suspense. Another simple automation trick is to adjust the master volume so that it gradually reduces by 1dB just before the drop, before changing back to the original volume to give the drop a greater bit of impact.

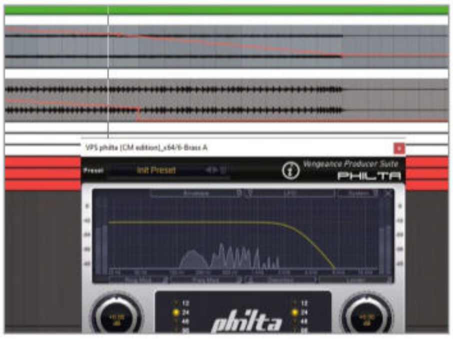
Creating clever edits to parts of the arrangement can also add individuality. One of bassline's most common edits is the false drop, whereby the drums will be muted for the first two bars of the drop in order to make the bassline the focal point after the buildup. It's also worth doing some subtle edits to your drums, either by adding extra parts that come in during the track or by making pattern changes at the end of a phrase.

> Step by step

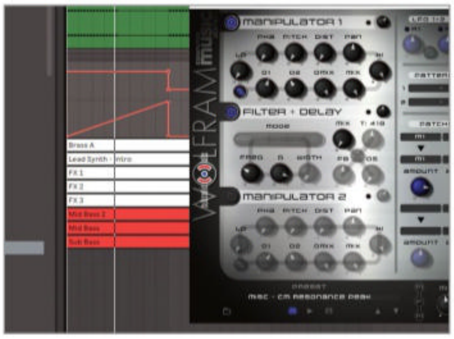
3. Designer drops


TUTORIAL
FILES
TUTORIAL
VIDEO
Vengeance Producer Suite
PHILTA
philta
music

1 > Let's add some individuality to our track using some clever plugin processing. Start by adding Vengeance's VPS Philta CM to the Lead Synth channel. We'll use the high-pass filter to gradually fade in the lead's low frequencies over the first eight bars of intro, for extra suspense.


Vengeance Producer Suite
PHILTA
Init Preset
philta

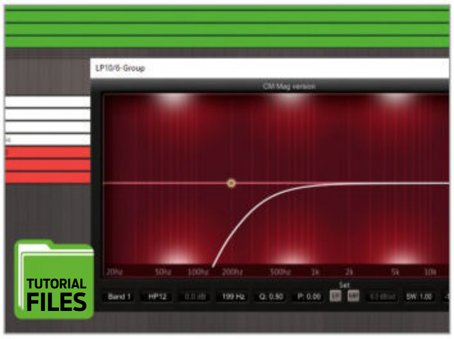
2 > Add another VPS Philta CM to the Brass channel, so we can low-pass filter the brass out leading into the drop. Draw in the automation, so it takes a few of the high frequencies away for the first eight bars, with a more obvious fall in the second eight.

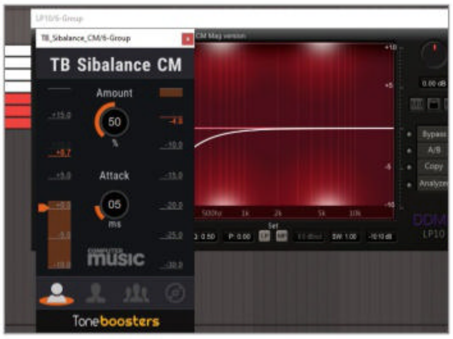

WOLFRAM
MANIPULATOR 1
FILTER + DELAY
MANIPULATOR 2
CM RESONANCE PEAK

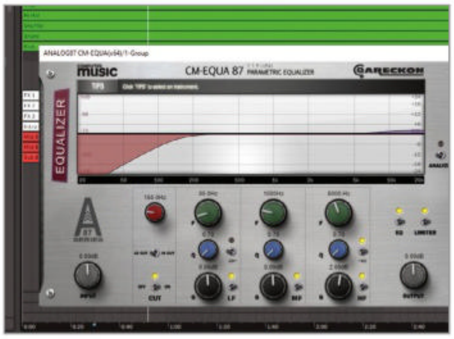
3 > Group the brass and lead parts. We'll use Subsonic Labs Wolfram CM on the group to process the musical parts together to lead into the drop. Load the CM Resonance Peak preset, then automate the Mix across the intro to gradually fade the effect in.

> Step by step

4. Bassline mixdown



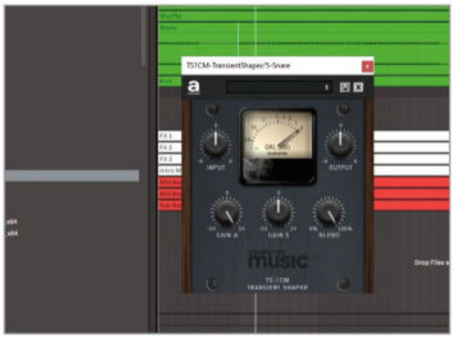


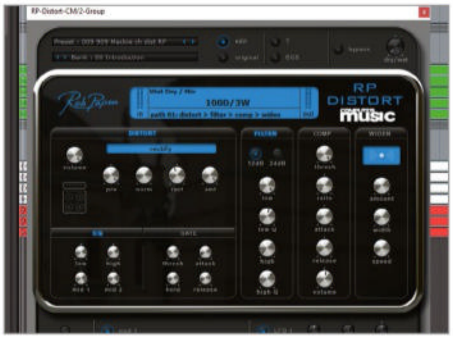


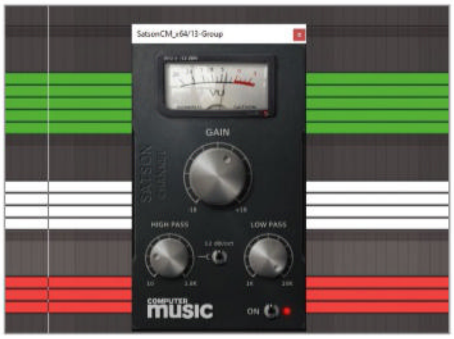
1 > Let's begin by processing the sound effects we've used, so they work with the other parts more effectively. Start by grouping the three effects. Call up DDMF's LP10CM EQ, and set Band 1 to HP12. Setting the filter frequency to 200Hz will roll off the low frequencies, adding clarity.

2 > Synthesised sound effects of this type often sound sharp in the high mids, thanks to the resonant filters and noise used to create them. We'll deal with this using ToneBooster's SibilanceCM; this is designed for vocal duties, but it helps control high frequencies in any sound.

3 > Let's turn our attention to the drums. Group all the parts, except the kick. Load up Eareckon's CM-EQUA 87 onto the group, and set the high-pass filter to 150Hz. This'll make room for the kick to breathe. A 2dB HF shelf boost at 8kHz adds shine to the drums.







4 > Let's process the snare. First, set the channel time delay to 5ms, so the snare is delayed behind the grid to aid layering with the clap. Next, add Audiority's TS-1CM transient shaper. Set Gain A to 24, and Blend to 100% to remove the 80s sounding reverb from the snare.

5 > Group the clap and snare, so we can process them as one. Add Rob Papen's RP Distort to the group, then select the Mackie CH Dist RF preset; this emulates a retro Mackie mixing board. Reduce the dry/wet to 3% wet, so our distortion is mixed into the dry signal.

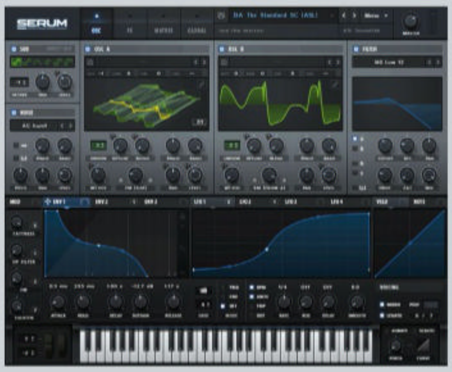
6 > To finish, we'll process the mid basses. Group them, and add Sonimus Satson CM. Set the high-pass filter to 9 o'clock, so it rolls off the low frequencies. Switch in the 12dB/oct filter, so it makes a sharper cut. Push the Gain to 1 o'clock to add drive.

Synth work

Sound design, and in particular bass synthesis, is a big part of the bassline aesthetic. Whilst you can use sampled basses to great effect, making your own patches using a synth will allow you to adjust the synth's tone as the track unfolds, creating interesting variations on your original sound.

As the sounds in bassline are very dense and detuned, it makes sense to use a wavetable synth with multiple oscillators as your starting point. Wavetable oscillators generally offer more harmonically dense waveforms, which can be combined together to create the attention-grabbing, complex tones we're after.

If you're still struggling for inspiration, you can always take signature sounds from other genres, such as 808 sub hits, jump up DnB bass hits or rave hoovers, and work them into the track alongside your own synth patches, either to use as the main bassline or as stabs.



Xfer's Serum is a great wavetable synth to use for sound design in genres like bassline

Using these kinds of sounds can give a timeless feel to your track, alongside an element of familiarity too.

POWER TIP

>Reining it in

You'll normally find that the detuned synth parts used in bassline have quite wild resonances between 300Hz and 2kHz or so, which is what gives them their unique character. The usual approach to these kind of issues is to reduce the resonant frequencies using EQ notches or multiband compression, but you might find that this can stop the synths cutting through correctly on a PA system. Instead, try and make room for these frequencies by making EQ cuts to the parts that sit in a similar frequency, such as pads, vocals or percussion.

TECHNO

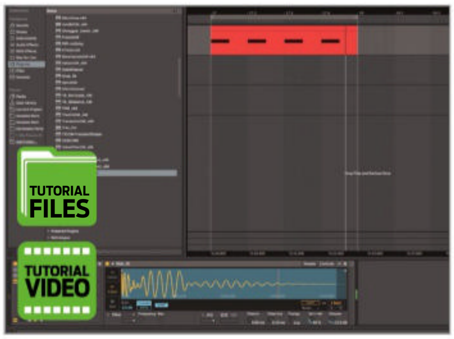
> Originating from the melding of synth-driven pop music from the likes of Giorgio Moroder and Kraftwerk alongside American music styles like house, funk and soul, techno has transcended its Detroit roots to become one of the world's most enduring and leading dance music styles, with artists such as Carl Cox, Adam Beyer and Jeff Mills in constant demand for both their productions and live sets.

Characterised by a tempo of between 120-150bpm, a palette of sounds heavily influenced by now-revered 1980s Roland kit like the TB-303 bassline and TR-808/909 drum machines, as well as a deliberately electronic, dystopian sound, techno has influenced many other music styles to varying degrees, including the UK rave scene which took inspiration (as well as a stab or two!) from the Belgian techno records that were being made during the late 1980s.

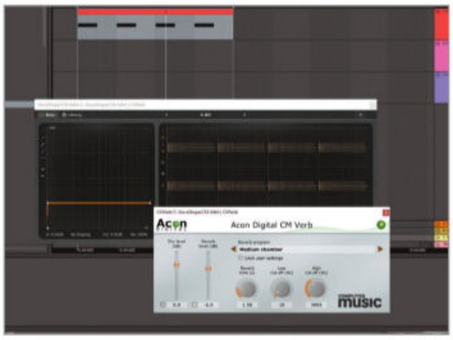
As early techno tracks were laid down using rudimentary equipment like inexpensive mixing consoles and four track tape recorders, the genre traditionally has a crunchy feel that's great fun to recreate in 2020. While techno seems very simple in construction, it can be harder to make than you think. However, we have a superb guide on how to make your own warehouse-shaking techno track using just your DAW, samples and the **cm** plugin arsenal that you can find over at filesilo.co.uk (Bookazines/Beginners Guide To Music Production). There are also videos, tutorial files and audio examples to help you follow along with ease.

>Step by step

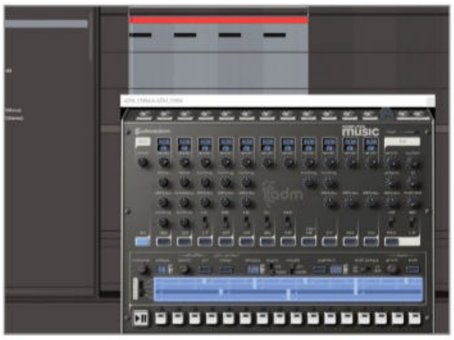
1. Techno beatmaking



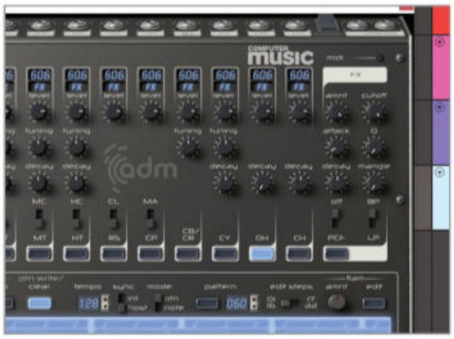
1 > We'll start by building a drum kit; set your DAW BPM to 128. From filesilo.co.uk, get the techno samples/MIDI files folder and load Kick_15.wav into a blank drum rack. This is a synthetic-sounding kick that works perfectly in a techno track. Draw MIDI notes to trigger the kick on each beat. Next, we make a rumbling, warehouse techno reverb from our kick.



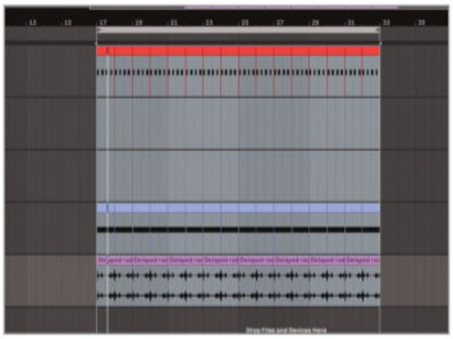
2 > Add Cableguys' WaveShaperCM to a fresh return track. Set a -6dB send from the kick drum to the return, then select the 2-BIt preset in WaveShaper. Hear the kick crunching, in a gabba-esque tone. Load Acon Digital's CM Verb after our distortion. Use the Medium Chamber preset, then turn off the dry signal to leave just reverb-soaked distortion.



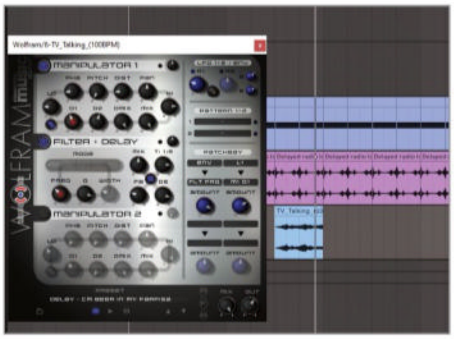
3 > We'll turn the reverb send down to -9dB, so it blends into the mix. Now, let's add perc into the mix, courtesy of Audiorealism ADM CM's great emulated TR-606 drum kit. Load ADM CM to a fresh channel, then switch Sync mode to Host, so ADM CM's playback is triggered by our DAW. Let's use the onboard sequencer to create an open hi-hat pattern.



4 > Hit the Pattern Write/Clear button, and let's program our own pattern. Select the OH (open hat) instrument, then dial in an open hi-hat on each offbeat. Add a new MIDI clip to the channel, then draw in a one-bar note to trigger our pattern. We'll reduce the open hat's Decay to 100ms, for a tighter initial sound that we can open out with automation later on.



5 > Let's create a longer arrangement. Duplicate the drums over 16 bars, so we can get non-perc elements in. From the samples folder, import Delayed Radio Loop 02.wav onto a fresh audio track; this is a vocal snip that's very techno. Reduce the channel's volume to -15dB, then duplicate the audio across the entire 16-bar section.



6 > Time to add another sample for a more dystopian sound. Add TV_Talking_(100bpm).wav at the end of each eight bar section. Reduce the channel to -6dB to retain balance, then load Subsonic Labs' Wolfram CM. We'll fire up the CM Beer In My Farfisa preset, adding a sustained delay tail to our static sample and making it feel part of the track.

RECOMMENDED LISTENING

TRAX
PHUTURE

PHUTURE
ACID TRACKS
One of techno's blueprint tracks, this has the signature sounds of modern acid techno, and wouldn't sound out of place as a fresh vinyl release today.

▶ bit.ly/ph_at

JOEY BELTRAM
ENERGY FLASH
In a genre driven by technological development, this 1990 cut still sounds fresh in 2020. One of many cult tunes from R&S Records.

▶ bit.ly/jb_ef

Jeff Mills
The Bells

JEFF MILLS
THE BELLS
All the ingredients of a techno classic, including the crunchy drums Jeff Mills is known for, alongside the Roland hi-hats that adorn most techno tunes going.

▶ bit.ly/jm_tb

The Aphex Twin

APHEX TWIN
DIDGERIDOO
Aphex Twin's trademark running, breakbeat-like drums, alongside a manipulated didgeridoo sample that's equal parts Australian outback and dystopian techno.

▶ bit.ly/at_ddgrd

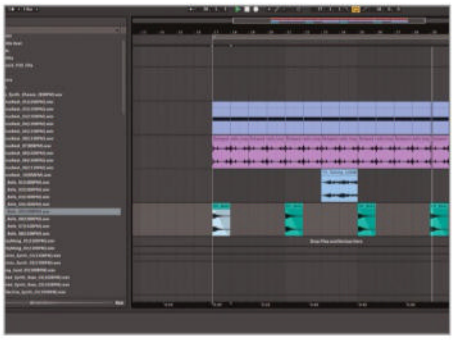
PRO TIPS

SIDECHAIN GAIN

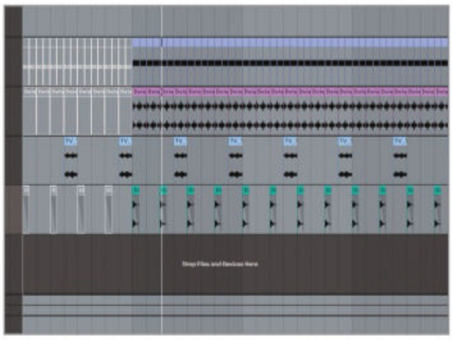
A superb way of adding unique flavour to your techno productions is to use a kick triggered sidechain compressor on a constant field recording of ambience, but reverse the compressor's curve so that the ambience pumps along with the kick, rather than around it. Either simply reverse your kick drum on a silent trigger channel, or use an infinitely configurable modulation plugin such as Xfer Records' LFOTool.

ONE STEP BEYOND

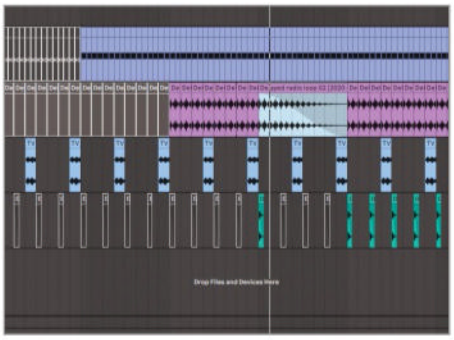
If you're making a stereotypical techno beat using TR-909 samples, try triggering them using a MIDI step sequencer, instead of placing them directly on the arrange page. As this was how techno was produced originally, you'll achieve a more authentic sound, particularly if you use your sequencers' on board swing control to add groove. HY-Plugins do a great MIDI step sequencer called HY-MPS2 that comes in either free, or paid for flavours.



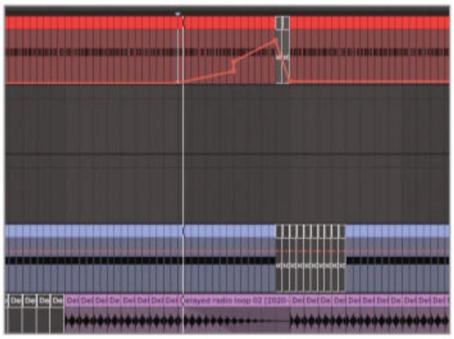
7 > Another element fleshes things out. Grab DX_Bells_05(100bpm).wav from the sample folder, and place it on a new audio channel. Shorten the clip to one bar, then apply an aggressive fade out. Copy the audio snip, so it plays every four bars. Reduce the channel to -7dB, so our mix balance is preserved. Next, we start building our full arrangement.



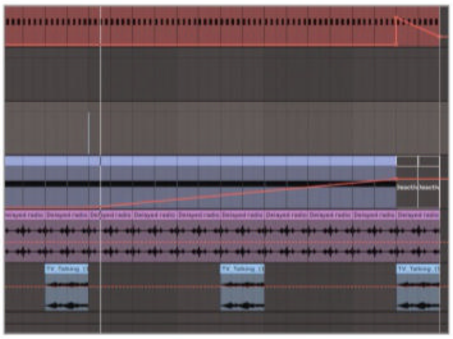
8 > Unlike other styles of music that are more focused on building to a drop, techno is arranged in a more progressive manner, with emphasis placed on making the sounds in the arrangement evolve. Let's build our arrangement. Duplicate the parts we've added already to create a 64-bar section in total. Mute the open hat, bells and vocal snip for the first 16 bars.



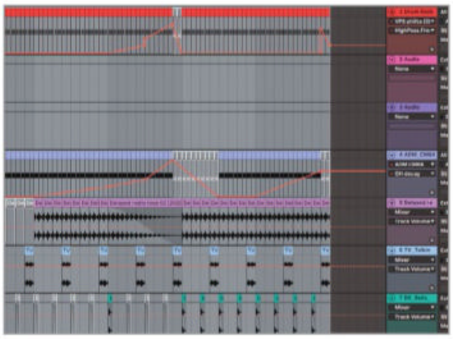
9 > We'll mute the vocal snip for the second 16 bars, with the bells muted for 32 bars. Duplicate the final 16-bar section twice, for use as the basis for the drop. Let's strip back the previous section now. Mute all the bells except the first one, then consolidate the vocal snips into one. Apply a fade to the vocal, so it disappears over 16 bars.



10 > Mute the kick and open hat for the last two bars before the drop, so the sound effect we added earlier is emphasised. We now use Vengeance's VPS Philta CM to filter the kick. Add it to the channel, then draw in automation of the high-pass filter so the kick sounds increasingly hollow during this section. Next, mute the open hat from the first eight bars of the drop.



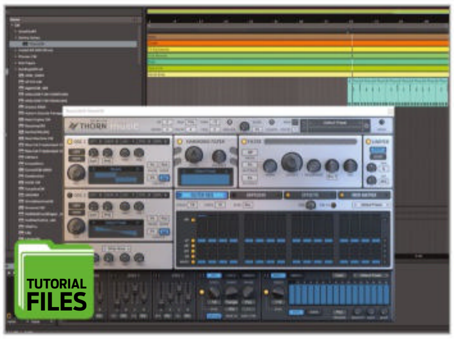
11 > Make the arrangement evolve by automating the decay of our open hat. Draw in automation, so the hat becomes more intense as the intro develops, before snapping back to a tight sound on the drop. We'll ramp it up for the second 16 bars of drop, before muting the hat for the last two bars. Automating the kick's filter for the last two bars creates a fill.

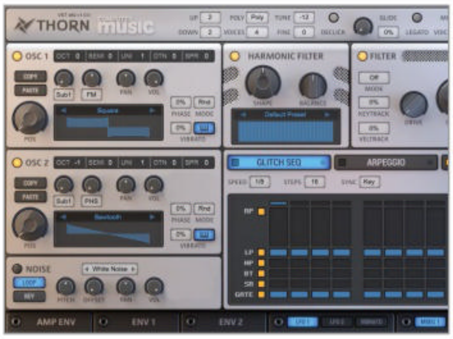


12 > Automate the kick's reverb return volume leading to the drop, so it increases to 0dB before snapping back to its usual -9dB after; this makes the reverb swell into a cool effect. To finish, add a crash cymbal to the start of each 16-bar section to mark them out. Head for the sample folder, and grab 80s_Cymbal_04.wav. Reduce the channel to -18dB.

> Step by step

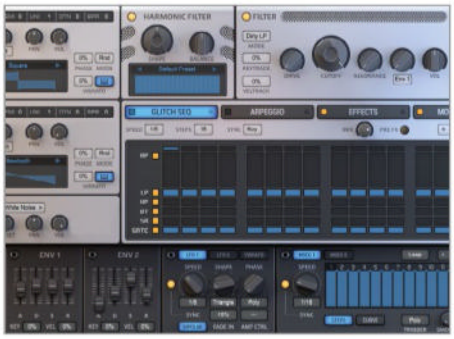
2. Creating a techno-style 'stab'

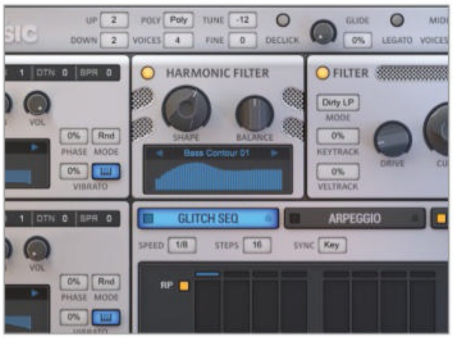

THORN
TUTORIAL FILES


THORN
OSC 1
OSC 2
HARMONIC FILTER
FILTER
GLITCH SEQ
ARPEGGIO
NOISE
AMP ENV
ENV 1
ENV 2

1 > Let's create a cool techno stab using Dmitry Sches' superb ThornCM. Load it on a fresh channel, then import Stab.mid (from the techno samples/MIDI files folder at filesilo.co.uk) to trigger the synth. Open ThornCM, and set Oscillator 1 to a square wave; this has lots of harmonics and is an ideal starting point for a techno stab.

2 > We'll use Oscillator 2 to modulate the frequency of Oscillator 1. Turn on Oscillator 2, and turn the Volume to 0%. Set Oscillator 1's FX type to FM, and push the amount to 50%; you'll hear the stab's tone change. Tune Oscillator 1 down by an octave to add character.


HARMONIC FILTER
FILTER
GLITCH SEQ
ARPEGGIO
EFFECTS
ENV 1
ENV 2


HARMONIC FILTER
Bass Contour 01
FILTER
Dirty LP
GLITCH SEQ
ARPEGGIO
SPEED 1/8
STEPS 16
SYNC Key

3 > Modulating the filter shapes our sound. Set the filter mode to Dirty LP, with the Env 1 dial at -100%, so that Envelope 1 controls the filter cutoff. Adjust Envelope 1's Attack to 40%, with the other three sliders all at 50%; you'll hear the stab become less open-sounding.

4 > Let's shape the sound more with the Harmonic Filter. Choose the Bass Contour 1 preset, and dial the Shape in at 60%; you'll hear the filter remove a little weight from our stab. To finish, push the Filter Drive to 3dB or so; a little drive adds volume and thickness.

Rumbling reverb

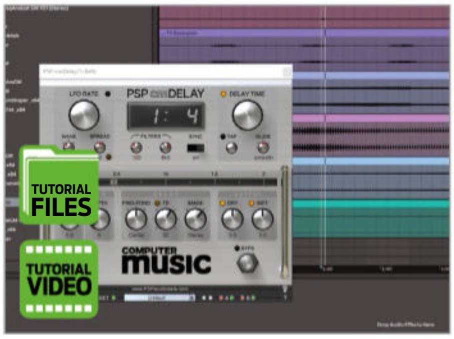
Reverb is an essential part of the techno recipe, and can really set your track apart from others in the genre. Often used to create a sense of space in a more minimal production, or to add that trademark rumbling bass tone that fills out the low frequencies around the kick, well used reverb simply sounds great in a typical, echoey warehouse techno rave.

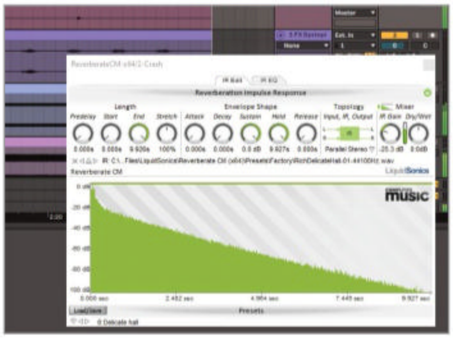
A great tip when using reverb in your own production is to be very aware of mono compatibility. Generally, reverb is used to mimic the acoustic properties of a space, and phase cancels to a degree when collapsed into mono. Meanwhile, techno is primarily intended to be heard in a club setting, on some kind of chunky mono PA system.

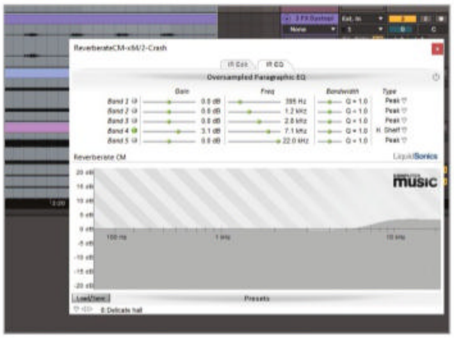
These two conflicting things can be hard to balance well, so try using mono reverb for at least some parts if you want the reverb sound to translate faithfully to the rave, particularly if it's a rumbling reverb applied to a kick drum.

> Step by step

3. Adding effects


PSP cmDELAY
TUTORIAL FILES
TUTORIAL VIDEO
COMPUTER music


ReverberateCM
Reverberation Impulse Response
Presets
Delicate hall


ReverberateCM
IR Edit
IR EQ
Oversampled Paragraphic EQ
Band 1
Band 2
Band 3
Band 4
Band 5
Presets
Delicate hall

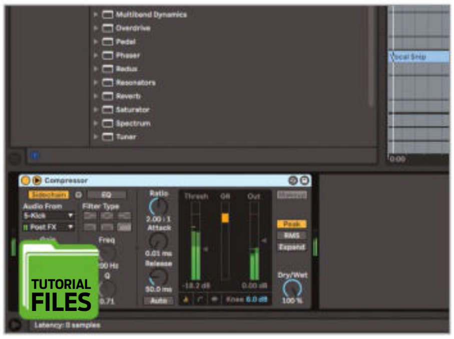
1 > We make our techno track sound a little bit more complex by adding in some effects processing. Start by loading PSP's cmDelay onto the Bells channel. Turn the Sync on, and set the Delay time to ¼ notes. Automate the Feedback aggressively from bar 49 until 63, so that the bells swell in volume.

2 > The delay tail gets overly loud during the break, so automate cmDelay's Wet level so it decreases by around 6dB as the breakdown unfolds. Let's now turn our attention to the crash cymbal, which ends abruptly right now. Add Liquidsonics' ReverberateCM onto the channel, and pick the Delicate Hall preset.

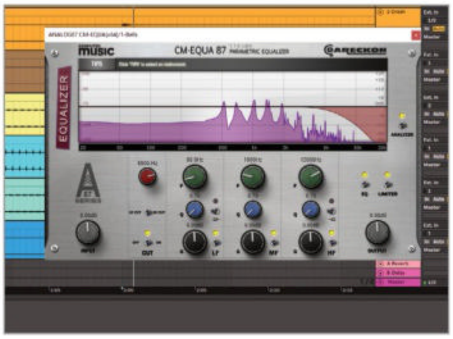
3 > The reverb preset that we've selected has a long tail, and disguises the short crash brilliantly. However, it sounds a little dull in the mix, so open the IR EQ tab, turn on Band 4 and set it to a High Shelf. Boosting the band to 3dB adds high frequency sparkle.

> Step by step

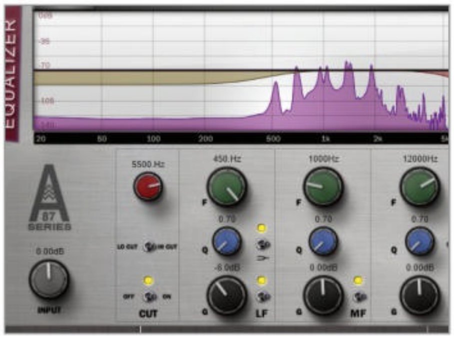
4. Mixing your techno masterpiece



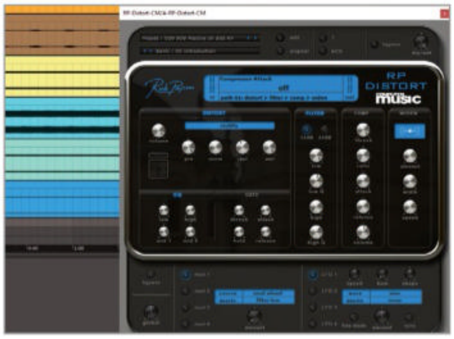
1 > First, we'll use your DAW's sidechain compressor to duck the kick reverb when the dry kick hits, increasing low frequency clarity. Add the compressor, setting the kick as the sidechain input. Decrease the Attack to its fastest setting, and adjust the Threshold until you hear the ducking effect kick in.



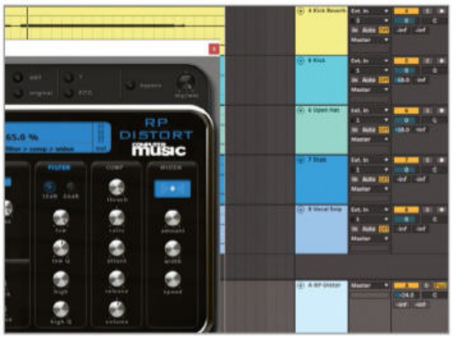
2 > The bells stick out of the mix slightly, so turn them down to -3dB. We'll EQ them too, so they gel with the mix nicely. Add Eareckon's CM-EQUA 87 to the channel, switching the Cut filter to Hi Cut. Set the frequency to 5.5kHz, so the highs are tamed.



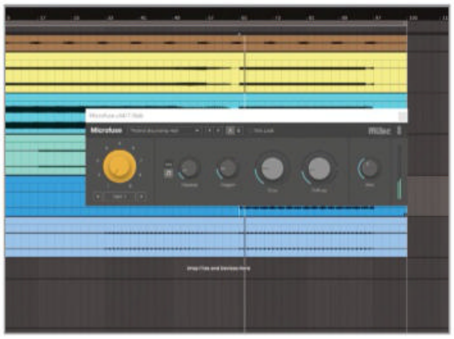
3 > We'll carve out some breathing space in the low mid frequencies now. Set the LF band to a shelf, with the frequency at 450Hz. Dialling in a -6dB cut gives added clarity to the low mid area, without bluntly removing the bell sound's richness like a harsh filter can.



4 > Now, we'll add crunch to the mix for a more authentically techno sound. Start by placing Rob Papen's beastly RP Distort CM on a return track. Select the 909 Mackie Ch Dist preset; this emulates the crunch of a classic Mackie mixing board like those used back in the day.



5 > Set up some -18dB sends from the kick, crash and open hat to our distortion return. The distorted effect adds bite, drive and character, but overpowers the mix, so turn the distortion return channel down to -24dB. Next, we'll work on the synth stab we created earlier.



6 > Add Surreal Machines' Microfuse onto the channel, and select the Hybrid Bouncing Hall preset. This adds a spacious feel to the stab. Reducing the Size to 20% makes the effect gel with the track better. To finish, reduce the Regen to 30% so the effect doesn't overly feed back on itself.

Automation nation

The very best way to turn your own arrangements from a generic soup of samples and synths into something with life, character and flair is to use automation to evolve the sound of your track as it progresses. Automation is used in pretty much every professional music production you hear in numerous ways, ranging from the age old trick of boosting the master fader slightly for a song's final chorus, all the way through to the evolving delays and reverb used in dub mixing.

Originally, automation of mix parameters and effects was done live by the mix engineer as the song's final mix was dubbed to master tape, adding a level of pressure to get it right the first time. Now, we can program automation into our DAW, allowing us the time and space to get it sounding the way we want. If you've been looking to get a more human feel from your automation, then why not think about recording it in using a suitably equipped MIDI controller?

AKAI professional
LPD8

Using a controller like the Akai LPD8 can help add a human touch

POWER TIP

> Bassy toms

Roland drum machine sounds from the likes of the TR-808 and 909 are a staple in most house and techno tracks, as the original hardware is from the same era. So, a great tip if you're looking to create a cool bass for your techno track that's slightly different to others, is to grab an 808 or 909 tom, and pitch it down to the bass register using a sampler. As the toms are synthesised using similar circuitry to a kick drum, they carry plenty of weight when pitched down.

DRUM & BASS

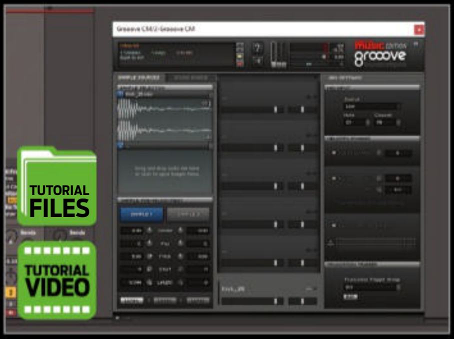
> DnB is a fast-paced style of music that has its roots in the 1990s London jungle scene. Early jungle records combined booming, reggae-inspired bass with heavily edited, pitched up funk breakbeats and samples taken from music styles such as hip-hop, ragga, jazz and techno. As jungle passed its peak in popularity a new take on the sound emerged, which was known as drum & bass.

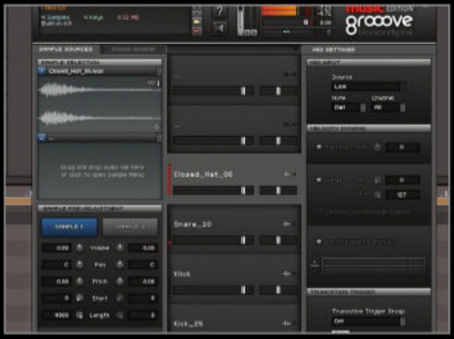
While the two styles of music are closely related in terms of BPM, structure and production style, DnB in comparison is typically more refined, both in terms of drum programming and overall production values. Great importance is placed on sound design, clever sampling tricks and making the low frequencies weighty, without compromising on loudness or brightness.

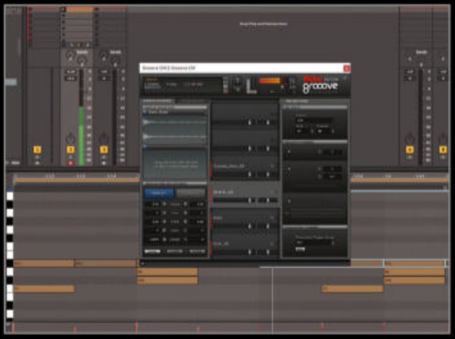
Part of the undoubted appeal of DnB is the wide variety of styles and influences that make up the genre, ranging from the uplifting liquid sounds of producers such as Calibre and Brookes Brothers through to hard as nails, jump-up smashers from the likes of Hazard or DJ Guv. With such a wide variety of colours in the DnB pallette, we couldn't think of a better idea than showing you how to make a DnB tune of your own. Over the next few pages we'll show you how to create a track in any DAW using the legendary **cm** Plugin Suite and samples that you can find at filesilo.co.uk (at Bookazines/ Beginners Guide To Music Production). Time to up the tempo and get producing...

>Step by step

1. Creating a DnB-style track – a rapid-fire guide



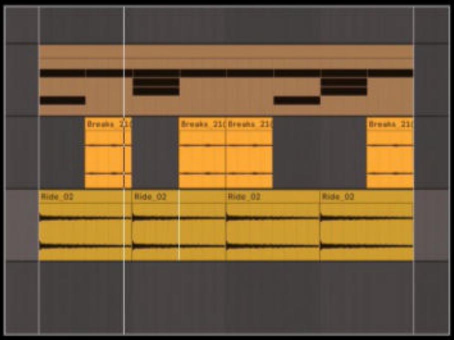


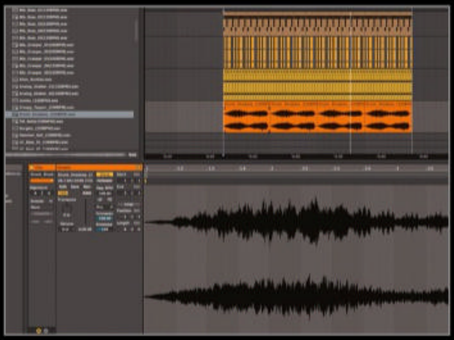


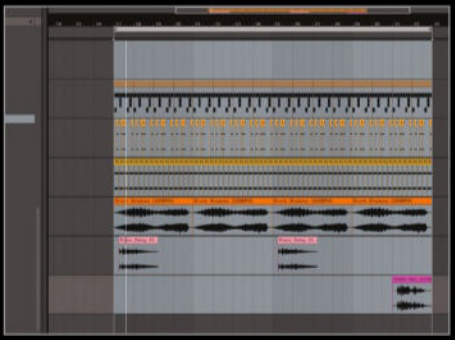
1 > Let's make a basic drum kit that we can build our track over. In a blank 174bpm project, add Brunsandspork's Grooove CM to a fresh MIDI channel; this is a drum pad sampler that's ideal for one-shots. Go to the Drum n Bass Folder at filesilo.co.uk, and import Kick_25.wav. To create room for our sub bass later on, pitch up the kick by five semitones.

2 > A finger click is the ideal basis for a light, layered snare; import Klick.wav into Grooove CM. We'll combine it with a real snare layer to give the finished snare power. Add Snare_10.wav in a blank lane. Finally, grab a live-sounding closed hat (we've used Closed_Hat_06.wav) and load it into our sampler. Now, create a drum pattern with these one-shots.

3 > Add a new MIDI clip to the channel, then draw in a basic 2-step drum pattern with the kick on beat 1 and offbeat of beat 3, snare/click on beats 2 and 4 and the hi-hat on 1/16th notes. To stop our drums running into the red, turn down Grooove CM's channel volume to around -6dB. Now we've got a basic groove running, we'll add a sampled breakbeat.



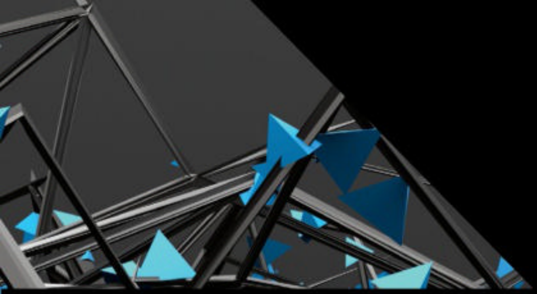




4 > Load Breaks_21(100bpm).wav onto an audio channel. We'll cut the shuffles from the break, and put them between the kick and snare hits. Adding the breakbeat shuffles gives our drums momentum; add splash to the high frequencies with a ride cymbal. Import Ride_02.wav, and place it on every beat. The ride's way too loud, so turn the channel down to -18dB.

5 > Add a fade to the start of each ride hit, so the initial transient doesn't clash with the kick, snare or hi-hat. Duplicate the drums across over 16 bars. Now, put some musical elements in. A drone sets the scene nicely, so import Drunk_Shadows_(100bpm).wav from the Drum n Bass folder. Reduce the channel's volume to -9dB, so it doesn't overpower the drums.

6 > Grab Piano_Delay_01_(120BPM).wav from the Drum n Bass folder, and place it on beat 2 of bar 1. This is a dystopian piano stab that goes with our drone. Copy the piano to the second eight bars, then turn the channel down to -15dB to keep the mix tidy. Import Statik_Rev_(120bpm).wav, and put it two bars before the loop's end, with the volume at -15dB.



RECOMMENDED LISTENING

CALIBRE
EVEN IF
A beautiful piece of production from the Belfast supremo. Beautiful strings, warm bass and crisp breaks with a great vocal performed by the man himself.

▶ **bit.ly/cal_ei**

DIMENSION
RAVER
This 2018 banger channels the spirit of old school rave, with an intro that features classic pirate radio vocals, with snappy drums and an FM-sounding bass.

▶ **bit.ly/d_rvr**

DBRIDGE & VEGAS
TRUE ROMANCE
One of the genre's bona fide classics, this is elegantly simple. A sampled break, and handful of stabs leave room for a warm, yet crunchy rolling bass hook...

▶ **bit.ly/dbv_tr**

BENNY L FT INJA
VANTA BLACKIN
One of last year's DnB anthems, this combines a reverb-soaked foghorn bass, punishing lows and eerie atmospherics with well-timed vocal stabs from MC Inja.

▶ **bit.ly/BnyLftl_VB**

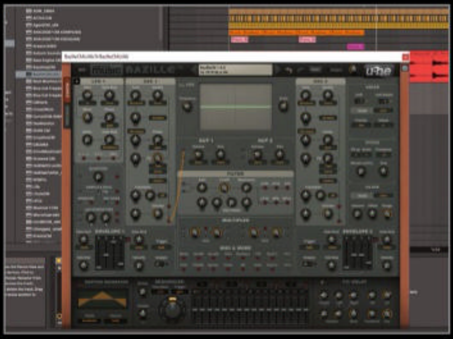
PRO TIPS

LOW-END THEORY

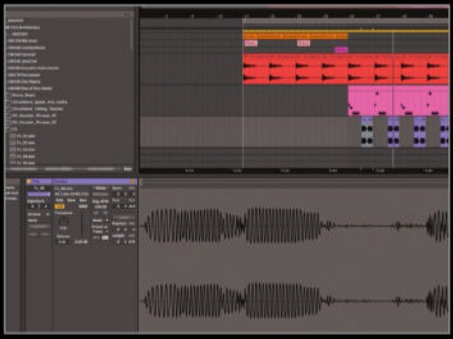
When writing a bassline for DnB, or most other bass music styles for that matter, it always pays to ensure that at least some of the notes are hitting between E1 and G1. While the notes in a bassline are dictated by what key the track is in, if the bass mainly plays notes above or below this area it can either sound flabby and low-pitched, or too honky and thin.

MIX AS YOU GO

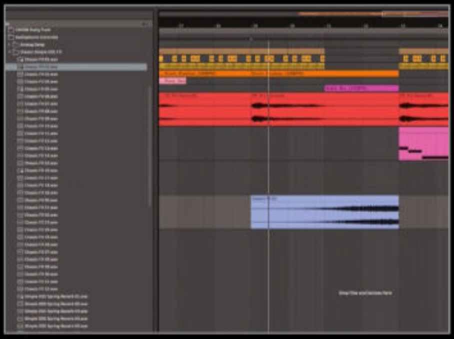
A superb way to make your final mixdown both less daunting, and more fun is to treat mixing more as something you do from the start, and less as a process that follows on from producing the track. Making sure basics such as levels, panning and EQ are on point while you're making a beat will make the track sound more polished from the word go, while making the final mixdown less of a chore.



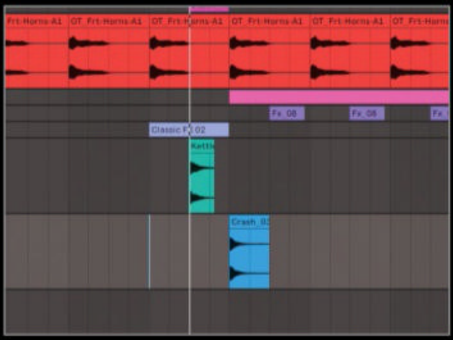
7 > To finish our intro, add a horn stab from the Drum n Bass folder. Place OT_Frt-Horns-A1.wav so it plays every four bars. Reduce the stab's volume to -6dB to blend it in. Copy the drums and horn stabs across to the next 16 bars, to start building the drop. u-he's awesome synth BazilleCM is great for making basslines, so add it to a new MIDI track.



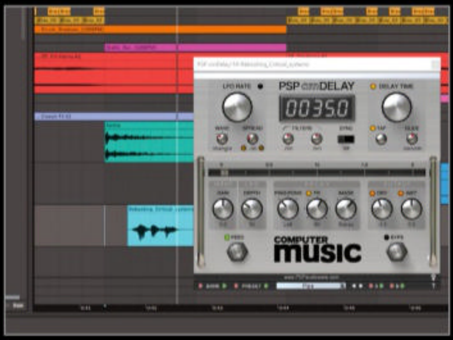
8 > Open BazilleCM, and pick the Psy Subs preset; this is a weighty bass that'll get the speakers flexing. Reduce the volume to -6dB, so the bass doesn't overload the mix. Add Bass1.mid onto the channel, a bass pattern in the tutorial folder. Fill the gaps between the sub bass with a bass sample and load Fx-08.wav onto a new audio track.



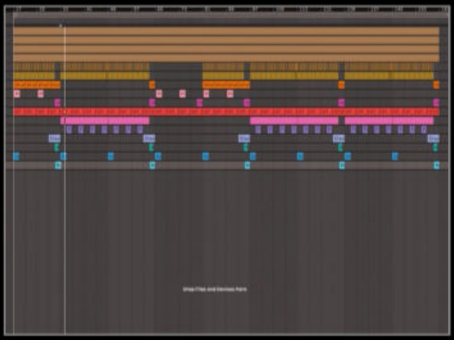
9 > Turn down the second bass to -5dB, so it balances with the mix. Now, we'll make a transition from the intro to the drop. Delete the last two bars of drums from the intro, then add Classic FX 02.wav from the Drum n Bass sample folder. This is a sci-fi sounding effect that we can turn into a basic riser by reversing it. Again, reduce the volume to blend it in.



10 > The transition between the sections still sounds awkward, so let's add some perc hits to glue it. Grab Kettle.wav from Drum n Bass folder and place it at the start of our two-bar gap. We'll also add a crash cymbal; import Crash_03.wav, placing it on the drop. Turn down both the crash and impact sounds, till they blend into the mix nicely.



11 > The final piece of our transition puzzle is a vocal snip. Take the sample Another Dimension.wav from the Drum n Bass folder. Place the sample on the second beat during the gap, then add PSP's cmDelay onto the channel so we can process the dry vocal. Call up the Pipe preset; this adds a ringy, metallic effect to the vocal.



12 > To finish, we'll add some variations to the arrangement. Start by adding a drum edit of your choice at the end of eight, and 16 bars to the drop. Copy the crash cymbal, so it's also at the start of the intro. Duplicate the drop, then delete the last two bars. Copy the edit at the end of the intro across into the gap to create another edit to end the phrase.

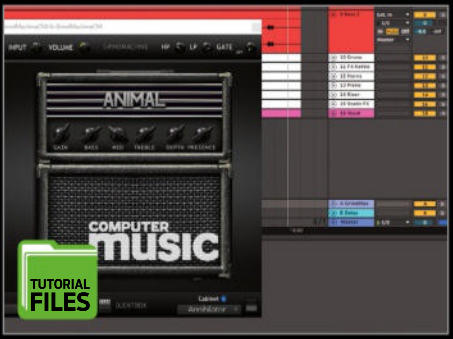
Sound design

DnB is well renowned for the next-level sound design skills showcased by the top producers in the genre such as Calyx & TeeBee, Noisia and Mefjus, who are all known for creating basses, leads, sound effects and even drums from scratch in the studio as opposed to sampling them from other sources. This dedication to crafting original sounds is what makes one producer stand out from another, and is something that we would recommend you look into a bit more closely as part of your production endeavours.

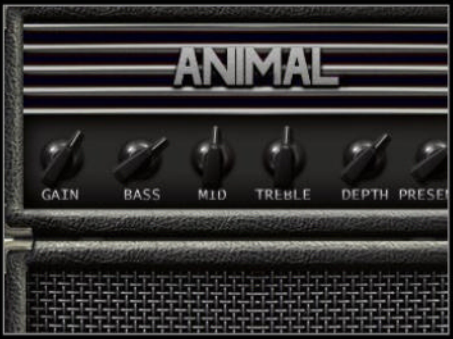
Sometimes, if you're designing sounds as you actually make a tune, you might find that the creation process of one impinges on the other, reducing your overall productivity and enjoyment. In that scenario, why not try splitting the two tasks into separate sessions? Spending one session solely making sounds using your synths and plugins is not only more focused (and fun, too!) but then gives you a big folder of ready-rolled, fantastic sounds for when you're in your next writing session.

> Step by step

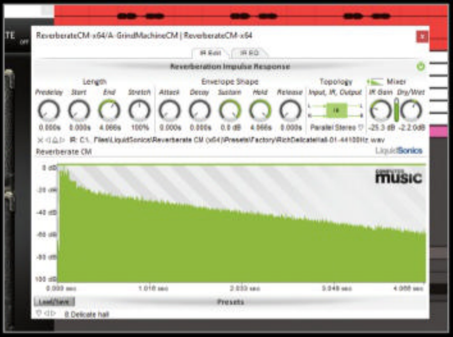
2. Adding bite to your bass


ANIMAL
COMPUTER music
TUTORIAL FILES

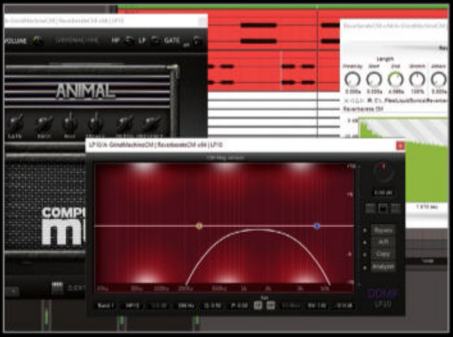
1 > We can use some weapons from the **cm** plugins arsenal to make our DnB bass stand out. Let's start by adding excitement to Bass 2, courtesy of some parallel distortion. Load up Djentbox's GrindMachineCM onto a new return track, and set up a -6dB send from Bass 2.


ANIMAL
GAIN
BASS
MID
TREBLE
DEPTH
PRESE

2 > The benefit of using effects in parallel on a return, as opposed to directly on the channel, is that we can process the wet signal independently of the dry bass. Set the treble and mid EQ in GrindMachineCM to 12 o'clock; this gives the distortion a richer, less sharp tone.


Reverberation Impulse Response
Length
Envelope Shape
Topology
Mixer
Reverberate CM
LiquidSonics
Delicate hall

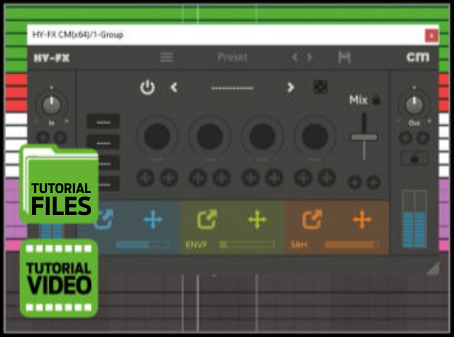
3 > Adding reverb will give a similar sound to the likes of Benny L and Loko. Place Liquidsonics' ReverberateCM after our distortion, choosing the Delicate Hall preset. Adjust the End time to four seconds, to reduce the reverb tail. Add more wet signal using the Dry/Wet dial, to reduce overall crunchiness.


ANIMAL
LP10

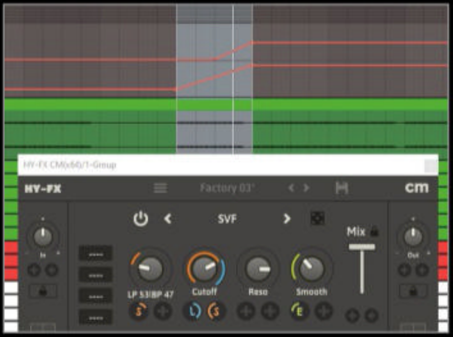
4 > To finish things off, we'll EQ the return. Place DDMF's LP10CM after the reverb. We'll use a 300Hz high-pass, and 8kHz low-pass filter to make room for the sub bass, kick and percussion in the mix. Turn the return's volume down to -3dB, so that the distortion blends into the mix.

> Step by step

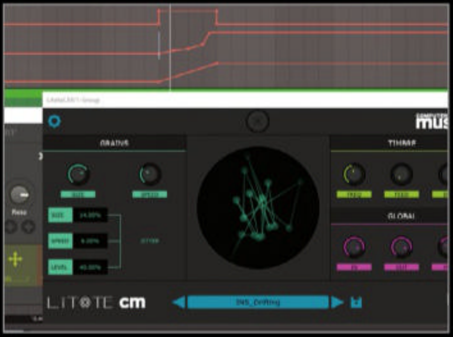
3. Dress up your drums


HY-FX CM(x64)/1-Group
HY-FX
Preset
cm
Mix
ENVF
S&H
TUTORIAL FILES
TUTORIAL VIDEO

1 > Drawing for some creative effects will make our drums more interesting for the listener during the breakdown and intro. Start by looping over the second 16-bar section of breakdown. We'll group the drums together, so we can process them collectively. Add multi-effect HY-FX CM to the drum group.


HY-FX CM(x64)/1-Group
HY-FX
Factory 03
cm
SVF
Mix
LP 3/BP 4/7
Cutoff
Reso
Smooth

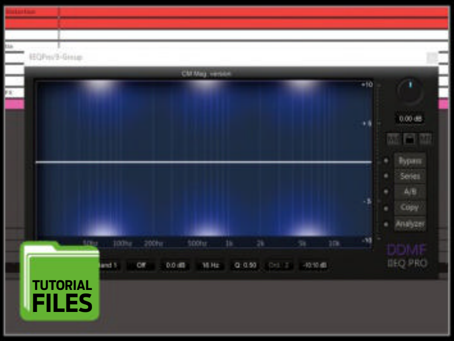
2 > Select the Factory 3 preset; this is a filter effect that's modulated by a sample & hold LFO for some added randomness. Automate the cutoff, so it rises over the entire section. We'll also automate the Filter type, so it switches from low-pass to band-pass filtering over the second eight bars.


GRAINS
TIMING
GLOBAL
LITOTE cm

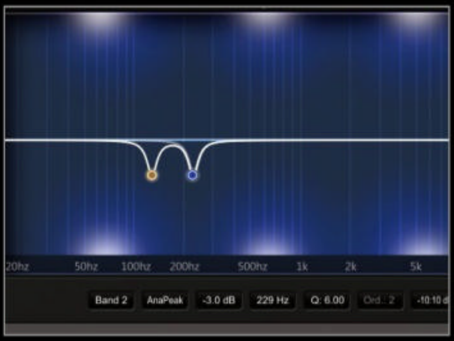
3 > Add Inear Display's Litote CM after the filter effect, so we can granulise our drums. Automate the wet/dry amount, so it gradually increases to create a futuristic, cinematic-style effect that works well with the breakdown. To finish, we'll automate both effects so they're bypassed for the rest of the track.

> Step by step

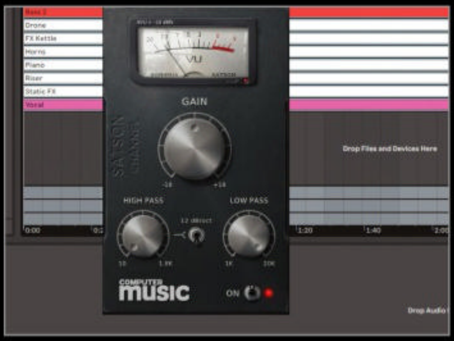
4. Perfecting your mixdown, DnB-style


TUTORIAL FILES
DDMF
IIEQ PRO

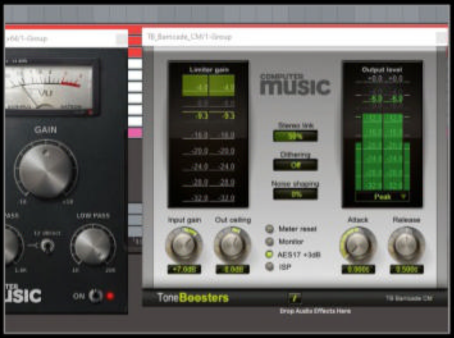
1 > DnB producers pay a lot of attention to their mixdowns, so let's run through some techniques. Start by grouping the basses. We'll use a little EQ on the group, courtesy of DDMF's IIEQ Pro CM, to carve out some more room for our kick and snare to punch through the mix.


20hz
50hz
100hz
200hz
500hz
1k
2k
5k
Band 2
AnaPeak
-3.0 dB
229 Hz
Q: 6.00

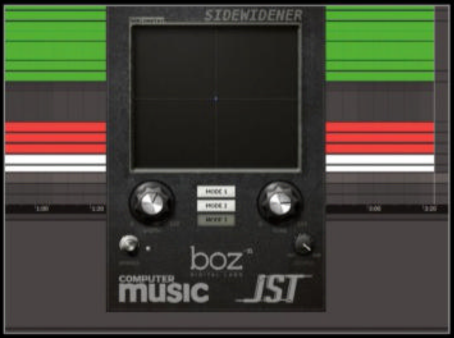
2 > Set up a -3dB AnaPeak on Band 1 at 130Hz, with the Q at 6. This makes a narrow cut that corresponds to the kick's loudest frequency, giving it breathing room. We'll also set up an identical cut at 230Hz on Band 2, to create space for the snare's punch.


GAIN
HIGH PASS
LOW PASS
COMPUTER music
Drop Files and Devices Here

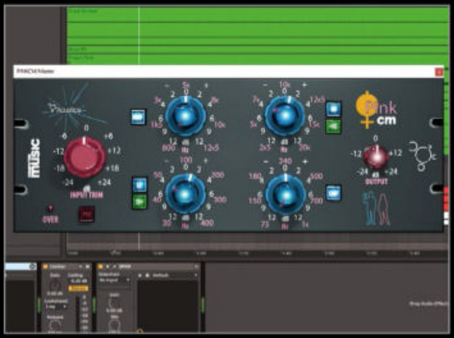
3 > We'll also apply a -3dB high-shelf at 1kHz, so that the high-mid frequencies of the distorted bass are pushed back from the perc. Next, we group the drums to process them more. Add Sonimus Satson CM to apply subtle, yet needed warmth via analogue modelled saturation.


GAIN
COMPUTER music
Limiter gain
Output level
Input gain
Out ceiling
Attack
Release
ToneBoosters

4 > Let's use ToneBooster's Barricade CM to limit the peak volume of our drum group, giving the mix a more cohesive sound. Set the Attack to 0ms, so that the limiter acts instantly. Pushing the Input gain to 7dB, and Out ceiling to -8dB keeps the balance of the mix intact.


SIDEWIDENER
boz
COMPUTER music
JST

5 > A little stereo width will make our drums pop. Add JST's SidewidenerCM to a new return channel, then set up -20dB sends from the ride, crash and finger click channels. Setting the Mode to 3, Width to 60 and Tone to 80 makes the effect seem brighter, and more exaggerated.


Pink cm
INPUT TRIM
OUTPUT

6 > To finish, we'll add a little extra depth and brightness to the entire mix using Acustica Audio's mastering-grade Pink CM. Add it to the master bus then apply a 1dB high-shelf boost at 7kHz, with a 1dB low-shelf boost at 50Hz to get the speaker cones pumping.

Breakbeat science

One of DnB's sonic signatures is the use of chopped drum breaks to create some, or all of, the rhythm track. Originally, the idea of using sampled breakbeats as the drum track came from hip-hop, with breaks used in hip-hop such as the Amen – sampled from The Winstons' *Amen Brother* – and Think break – taken from Lyn Collins' *Think (About It)* becoming staples for most DnB producers.

Want to use breaks? A great tip is to find the best quality samples of the break you want to use. You'll find that most songs containing well-known breaks are available on CD, so you can easily make a perfect digital rip. Another tip is to put your break into mono by picking one leg of the stereo pair, as most live drums are recorded using wide stereo mic techniques that don't translate well into dance music that's mostly heard in mono.

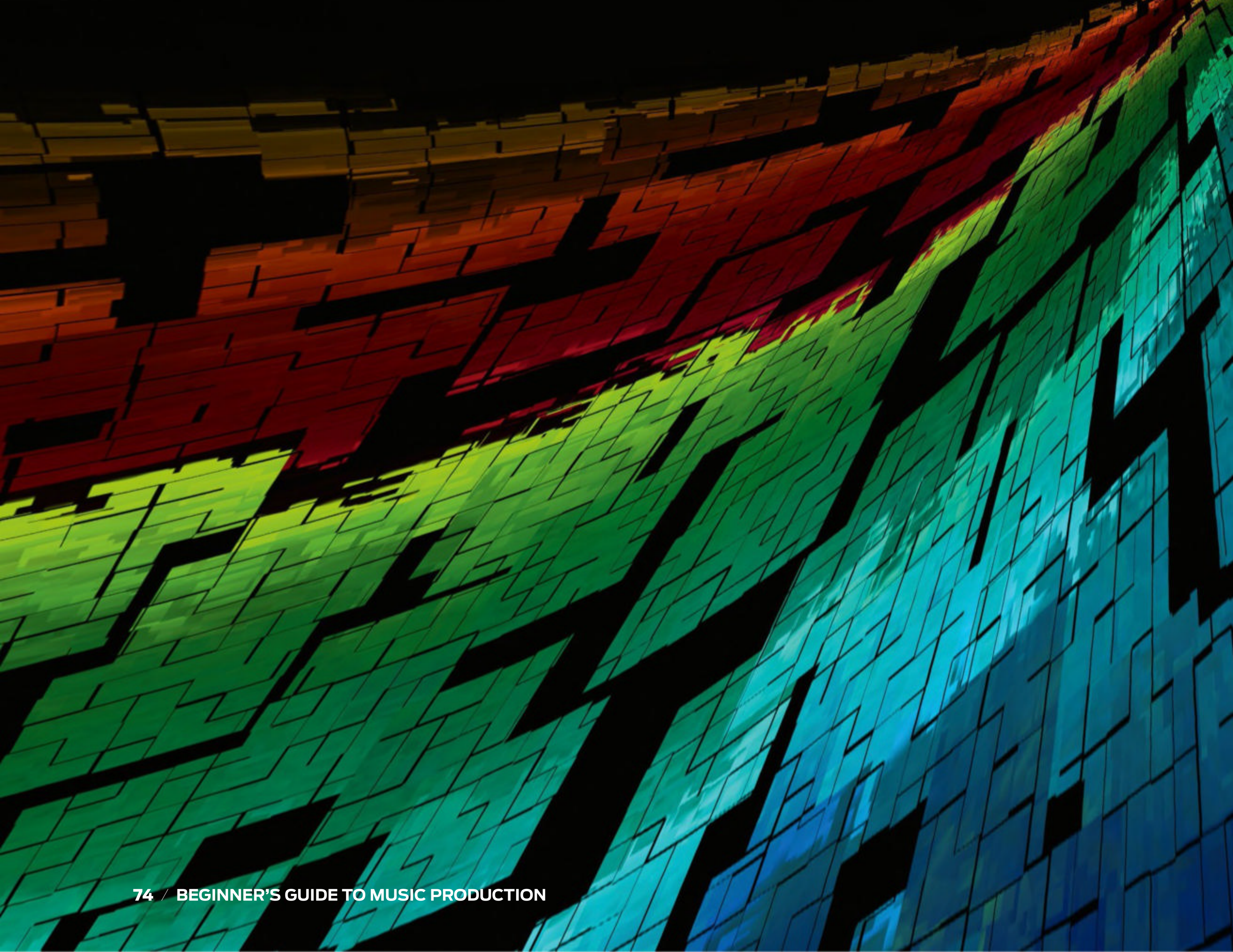
THINK (about it)
LYN COLLINS
THE WINSTONS
COLOUR HIM FATHER
AMEN, BROTHER

POWER TIP

>Space for bass

A key part of any pro DnB track is getting the relationship between the kick and bass right. A great rule of thumb is to make sure they occupy broadly different areas of the frequency spectrum; typically in DnB, the sub bass will be lowest frequency-wise (around 40-80Hz), with the kick's fundamental frequency above it at roughly 100Hz. If you're struggling, try placing a 200Hz low-pass filter on your master, so that you can hear how the instruments interact, without the mids and tops getting in the way.

ARRANGE TRACKS LIKE A **PRO!**



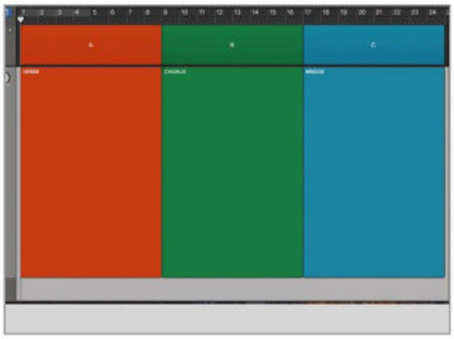
Want to avoid your music sounding formulaic? Get to know the nuts and bolts of arrangement with our guide

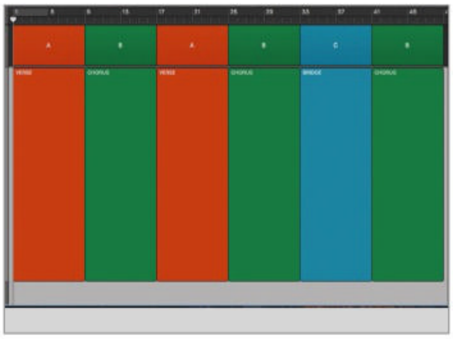
> It's often been said that the best way to get something done is simply to *begin*. However, while that may be true for many things, when making songs on a computer, getting started is all too often the easiest part – it's being able to properly *finish* a track, taking it past the 'loop of doom' stage, that's the most difficult part of the process. One of the big problems with modern day music production is that you can easily get as far as creating a spectacular four or eight-bar region, only to get stuck at the point where you have to start thinking about actually moulding it into a finished song. Many producers have a hard drive (or seven!) packed with unfinished ideas that started from flashes of inspiration but never got beyond that initial 'cycle mode' stage.

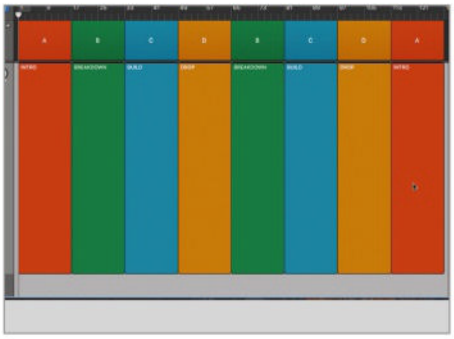
A lot of the time this comes down not to an overall lack of ideas, but to difficulty with the arrangement process – the sequence in which the different sections of your song are laid out. When it comes to engaging with your audience and provoking that essential 'reach for the repeat' response in your listeners, coming up with an effective arrangement is undoubtedly as important as the construction of the individual sections themselves.

Although today's DAWs put endless instruments, effects and track counts at our fingertips, it's all too easy to fall into a solely loop-based workflow that can actually stifle, rather than inspire, the ability to extend single regions out into a fully-arranged song. And that's where we come in! Within this mammoth 'arrangement workout' feature, you'll find plenty of ideas for developing half-formed sketches into fully-fledged tracks. We'll give you loads of inspiring suggestions for getting out of that rut and finishing your songs, revealing a boatload of supplementary tips and techniques along the way. So fire up your DAW, and let's see if we can't come to a suitable arrangement, shall we?

> Step by step 1. Basic pop structure





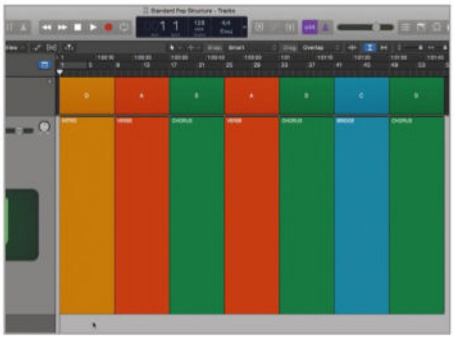


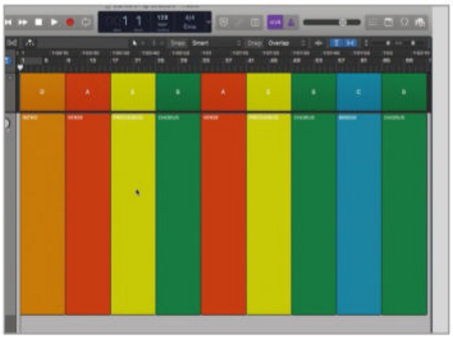
1 > Arrangement from the point of view of the average music producer mainly refers to the order in which the sections of a song are sequenced. Using the alphabet to represent these, one of the most well-used structures in pop is the **ABABCB** format, made of three sections: verse, chorus and bridge.

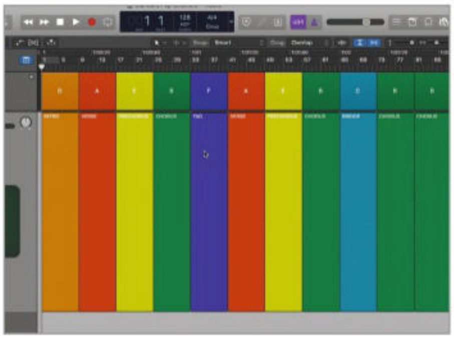
2 > The **A** section represents the verse, while the **B** section represents the chorus. At the simplest level, a song might begin with a verse of eight or 16 bars, followed by a chorus of a similar length, to give a basic AB structure. This whole segment would then be repeated with a second verse and chorus, giving us **ABAB**.

3 > The **C** section is a kind of breathing space in the middle, known as the 'middle eight' or 'bridge'. This gives the listener something different before the chorus repeats again at the end of the song. This segment is known as the outro chorus – so ultimately we end up with **ABABCB**.

> Step by step 2. Standard pop structure





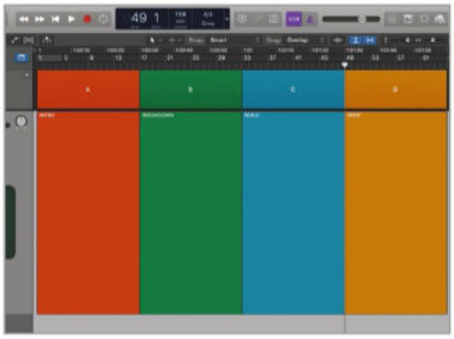


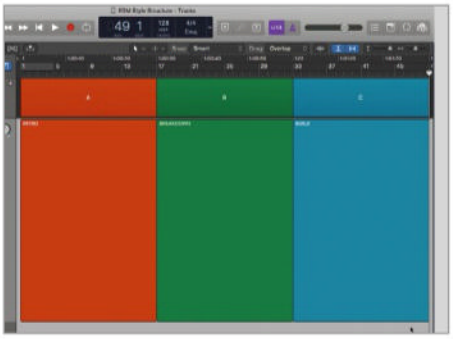
1 > A more sophisticated arrangement would expand on the basic form shown above, including extra sections for a bit more variety. It's common to have a dedicated intro section, for example. Represented here by the letter **D**, this is commonly eight bars long and serves to introduce the song.

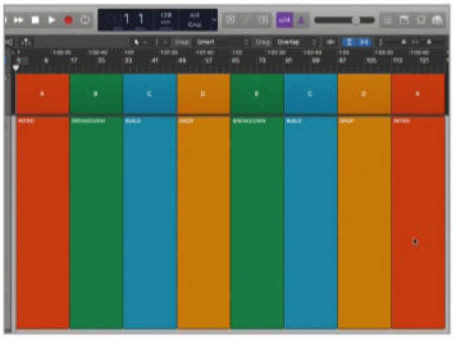
2 > Another extra element used a lot is the prechorus (also sometimes known as the bridge – we know, we know!). This is a section that links the verse and chorus, usually with a buildup, either musically or lyrically. Using a prechorus (shown here as the section **E**) is a very effective way to expand a basic arrangement.

3 > For a twist, why not stick a short 'reset' section between the chorus and the second verse? This section, known as a 'tag' and shown as the **F** section, can be a repeat of the chorus chords with a different hook over it, or simply a two-bar fill section. The resulting arrangement would be **D**, **A**, **E**, **B**, **F**, **A**, **E**, **B**, **C**, **B**, **B**.

> Step by step 3. EDM-style structure







1 > Your typical EDM song is structured so that the energy ebbs and flows dynamically. To keep the dancefloor full, you get high peaks and deep troughs in the form of builds and breakdowns, with high-energy, full-on drops sandwiched between. This equates to a format that can be shown by the letters **ABCD**.

2 > The **A** section is an intro of suitable length for a DJ to mix into – usually 16 bars or so – after which would come a breakdown or **B** section, which could be a stripped-down container for a verse vocal, say. Following this, you might have a long-ish build, represented here by the letter **C**, ramping up the tension before...

3 > ...the drop, shown by the letter **D**. The EDM equivalent of the chorus, the drop, is where the beat 'drops' and the infectious hook kicks in. This completes the ABCD segment, the last three sections of which may be repeated again, before the song rounds off with a DJ-friendly repeat of the intro serving as the outro.

ANALYSIS

Stay – Zedd feat. Alessia Cara

Zedd's 430 million-viewed track *Stay*, is a good example of a traditional song structure with an EDM-inspired twist, adding an additional instrumental drop chorus after what would ordinarily be a standard chorus, but which in this case is almost completely made up of acapella vocals. This would have been an unusual step a decade ago, but producers are continually experimenting and pushing the boundaries of the traditional song form. The three-minute pop song format currently offers a wider canvas for dynamic exploration than ever. Pounding drums now yield to atmospheric breakdowns more frequently than just once in the middle of the song, and innovative use of technology such as pitch warping, Auto-Tune and Melodyne, together with instruments like iZotope's VocalSynth 2, are making it possible to craft new song sections that don't rely on conventional vocals - of which this tune is a perfect example. Here's a breakdown of the arrangement.

0:00 INTRO

A looped and pitched-up sample of a male voice humming an intricate lick serves as the introduction to the song, cycled over four bars and backed with the two main chords that go on to provide the backdrop to the verse, prechorus and bridge sections.

0:09 VERSE 1

The delicate verse vocal melody enters over a synth pad and that continually looping hum. All the main sections from this point in the song onwards are eight bars long.

0:28 PRECHORUS 1

After a percussion fill, things start to build over a backdrop of minimal percussion: mainly reverbed finger snaps and clattering, low-pass filtered, high-pitched snares.

0:47 CHORUS 1

Here's where it gets interesting. We're expecting a full-on chorus, but the track falls away completely, leaving us with just the acapella vocal chorus hook, backed by computer-generated BVs. The only other musical element is the bass that punctuates a single root note with every chord change. Machine-gun snare fills prolong the second four bars to lead us to...

1:05 DROP 1

In come the drums and the rest of the track, expertly arranged swooping synths taking over from the vocals. Intricate fills keep us interested from the rhythmic point of view. A sampled 'uh' and one line of lead vocal half way through seem to be all that's needed vocally at this point.

1:24 TAG

A one-bar rest, over which the reverb and delay overhanging from the drop die away, helps us reset in readiness for the reintroduction of that looped sample and verse two.

1:27 VERSE 2

Gradually opening filtered percussion and a subtle vocal countermelody are all that really set the second verse apart from the first, but the development in terms of the progression of the song is still noticeable.

1:45 PRECHORUS 2

The development continues. This prechorus is discernible from its predecessor by the addition of a fuller drum track with kicks and offbeat tambourine, together with big piano chords filling out the musical side of things.

2:04 CHORUS 2

This chorus, too, comes across as a breakdown, sounding almost the same as the first but with the addition of the ticking clock sample throughout, and a fuller synth pad part that appears earlier in the section.

2:23 DROP 2

Other than some additional high-end percussion in this second version, the two drop sections are pretty much identical.

2:42 BRIDGE

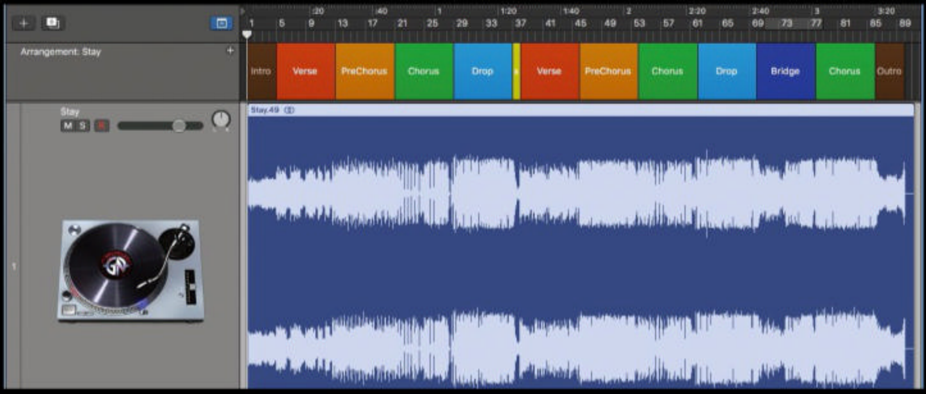
Musically the same as the intro, verse and prechorus sections, the bridge is mainly synth pad, vocal and picky guitar line, until the kick drum reappears again four bars in, ushering in a short build-up to the final drop chorus.

3:01 DROP CHORUS

The full-instrumentation, sing-along chorus section that the whole song has been building to. To keep it to a radio-friendly length, there's no double-length outro chorus, merely a single eight-bar section that fuses the vocal hook from the chorus with the music of the drop.

3:19 OUTRO

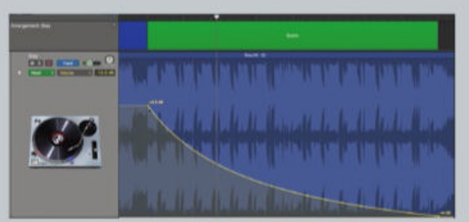
Practically a musical mirror image of the intro, the identical four-bar outro brings us back to earth with a downward-facing vocal adlib, ready for the anticipated hit of the repeat button.



Zedd's *Stay* combines EDM-style and traditional arrangement approaches to great effect

Fading away

For a number of reasons, the fadeout - a gradually diminishing, repeated hook - used to be the go-to way to end a pop song. The legendary SSL mixing consoles found in large studios in the 80s had a magic 'Auto Fade' button in the centre section, and there was even an urban myth amongst studio folk in the 90s about the existence of a world-class session fadeout artist, known as Johnny Bag'o'Doughnuts, who would put a top-notch fadeout on your song for the session fee of... yep, a bag of doughnuts. Yet although reports indicate that the peak year for the fadeout was 1985, since then it seems gradually to have fallen out of favour with producers across all genres, with only a handful of recent chart hits ending with a fade. So why is this?

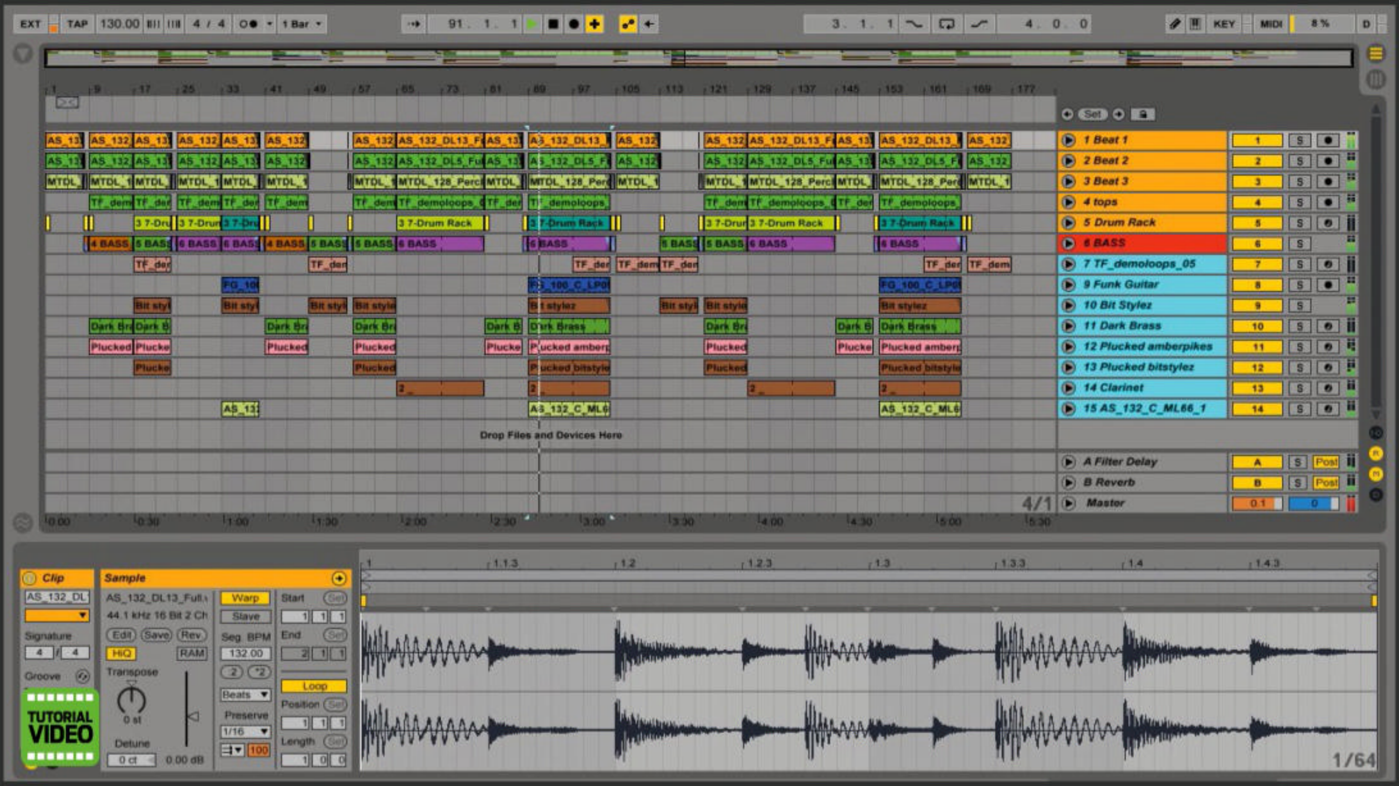


Thanks very much, fadeout, but your services are no longer required...

Well, in terms of current trends, the fadeout has obviously had its day, but there may be deeper reasons for its decline than mere fashion. According to veteran 70s recording engineer Ron Albert: "The fade happened because we had to give the DJ a cue that the record was ending, so they could talk over that and segue into the next record. If the record company decided an album track would become a single, we'd usually have to edit and fade it to keep it under the three-minute mark. It was all about radio."

In this digital age of streaming, however, music consumption has changed immeasurably, to the point that songs are now a completely different product, so it looks like the fadeout may have faded out for good.

Arranging in Ableton Live

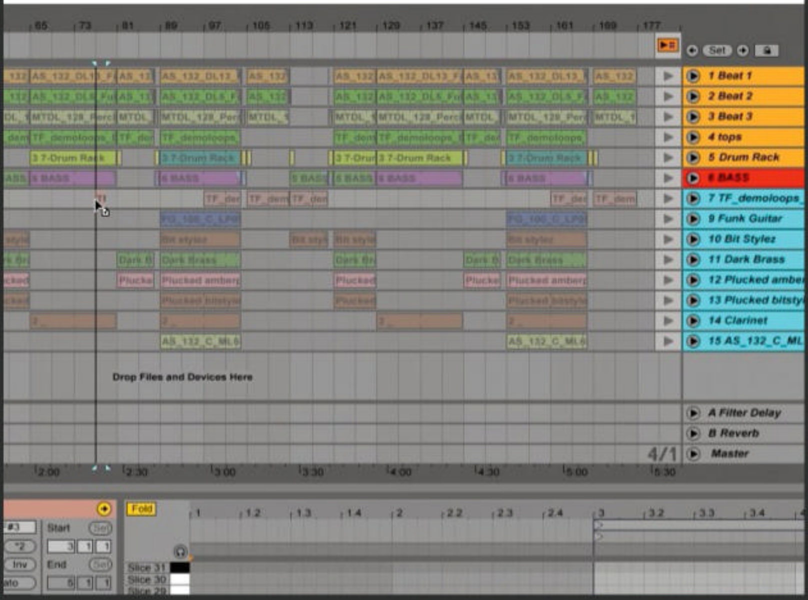


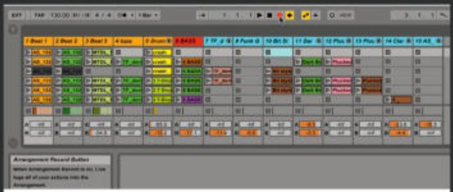
Arrangement View

If you are an Ableton Live user, its Session View is great for assembling clips into multitrack sequences, but if you've transitioned to the DAW from a traditional, linear-based arranging background, its loop-based nature can at first seem restrictive when it comes to developing ideas into fully arranged tracks. This is where the Arrangement View comes in, enabling you to chip away, move things around and generally finesse and finagle your project into something that sounds like a finished record with a proper beginning, middle and end, rather than a set of repeating loops. But how do you get clips into the Arrangement View to start with? Here are the two main methods to consider...

Method 1 – Drag and drop via Tab key

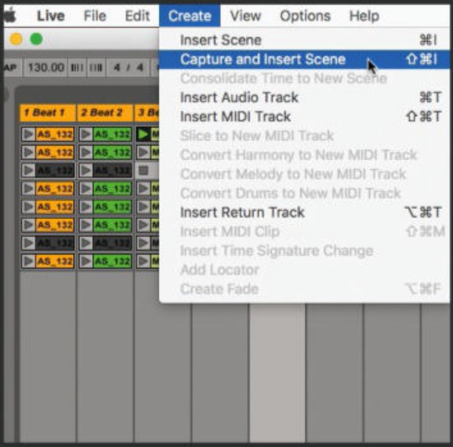
The default hotkey for switching between Live's two modes is your QWERTY keyboard's Tab key, and you can use it to transfer clips from one view to the other and back again. In Session View, click to select the clips you want to transfer – individual ones or a multiple selection – and click-hold on one of the selected clips. While holding, hit the Tab key to switch to Arrangement view, then drag the clip to the desired position in the timeline and release – simple! The ability to select multiple clips at once lets you build up a solid arrangement fairly quickly using this method, and the bonus is that it also works in reverse. If you record a new idea directly into the Arrangement View that you want to experiment with further, you can drag it into Session View using the Tab key in exactly the same way.





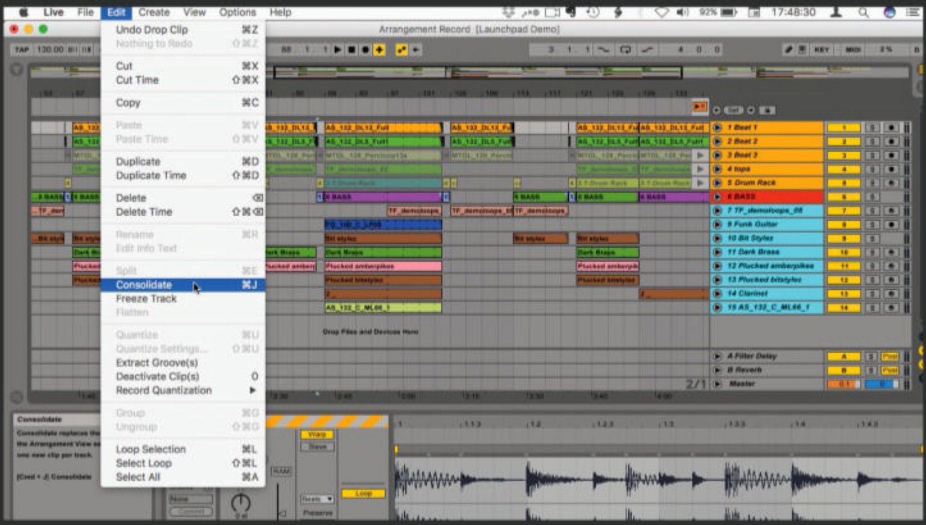
Method 2 – Arrangement record

You can also trigger Session View clips on the fly and record the result directly into the Arrangement View. Ensure all tracks in the Session View are disarmed for recording, and that the Arrangement View's Cycle mode is disabled. Hold down Shift and click the Record button in the transport bar – Live will wait until you trigger your first clip, then start recording your moves. As you jam out a performance, a corresponding set of regions will be recorded onto the tracks in the Arrangement View. This works especially well with a hardware controller. Once finished, press the Stop All Clips button in the master channel to end the recording and switch to the Arrangement View, where you can tweak the performance and complete your track by recording new parts, transition effects and percussive punctuation directly in at the correct points in the song.


Live
File
Edit
Create
View
Options
Help
Insert Scene ⌘I
Capture and Insert Scene ⇧⌘I
Consolidate Time to New Scene
Insert Audio Track ⌘T
Insert MIDI Track ⇧⌘T
Slice to New MIDI Track
Convert Harmony to New MIDI Track
Convert Melody to New MIDI Track
Convert Drums to New MIDI Track
Insert Return Track ⌥⌘T
Insert MIDI Clip ⇧⌘M
Insert Time Signature Change
Add Locator
Create Fade ⌥⌘F
1 Beat 1
2 Beat 2
AS_132

The scenic route

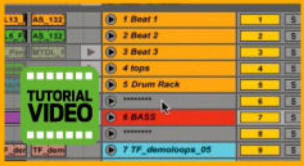
If using the Arrangement View doesn't appeal, you can still use the Session View to generate arrangement ideas in the form of Scenes. If you have multiple clips laid out in the Session View, experiment with different combinations by playing one clip at a time, then mixing it with others one by one. When you hit a combination that works, turn it into a Scene by selecting Capture and Insert Scene from the Create menu. Give it a suitable label (verse, breakdown, etc), then try a few more combinations of different clips. Once you've built a few Scenes, try playing them in different sequences to sketch out rough arrangements.


Live
File
Edit
Create
View
Options
Help
Arrangement Record [Launchpad Demo]
Undo Drop Clip ⌘Z
Nothing to Redo ⇧⌘Z
Cut ⌘X
Cut Time ⇧⌘X
Copy ⌘C
Paste ⌘V
Paste Time ⇧⌘V
Duplicate ⌘D
Duplicate Time ⇧⌘D
Delete
Delete Time
Rename ⌘R
Edit Info Text
Split ⌘E
Consolidate ⌘J
Freeze Track
Flatten
Quantize ⌘U
Quantize Settings... ⇧⌘U
Extract Groove(s)
Deactivate Clip(s) 0
Record Quantization
Group ⌘G
Ungroup ⇧⌘G
Loop Selection ⌘L
Select Loop ⇧⌘L
Select All ⌘A
1 Beat 1
2 Beat 2
3 Beat 3
4 tops
5 Drum Rack
6 BASS
7 TF_demoloops_05
8 Funk Guitar
10 Bit Styles
11 Dark Brass
12 Plucked amberpikes
13 Plucked bitstyles
14 Clarinet
15 AS_132_C_ML66_1
A Filter Delay
B Reverb
Master
Drop Files and Devices Here
17:48:30
92%

Consolidation service

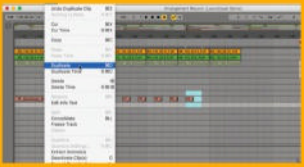
Live's Consolidate command (Cmd/Ctrl-J) is really useful for tidying things up in the Arrangement View, especially if you've ended up with loads of tiny little clips scattered everywhere – it replaces a selected range of material on a track with one new clip. Not only does this look tidier, but it's also useful when, for example, you have a linear sequence of clips that work well together as a part. Consolidating these into one long clip allows you to drag its edges to create further repeats. On audio tracks, Consolidate renders the selected clips into one single piece of audio, replacing the existing clips in the Arrangement View.

Ableton Live arrangement tips


TUTORIAL VIDEO
1 Beat 1
2 Beat 2
3 Beat 3
4 tops
5 Drum Rack
6 BASS
7 TF_demoloops_05

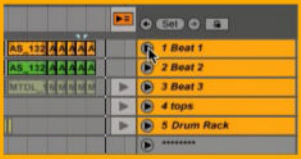
KEEP 'EM SEPARATED

If your project contains a lot of tracks, create a blank track and place it between two distinct groups of tracks as a visual separator. This keeps things tidy and lets you home in on specific areas of your arrangement more quickly.



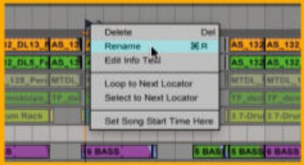
COPY THAT

Live's Duplicate command (Cmd-D on Mac, Ctrl-D on PC) is a handy tool for knocking out arrangements quickly. It essentially duplicates the selected area directly after the selection – in other words, it's brilliant for repeating sections.


Set
1 Beat 1
2 Beat 2
3 Beat 3
4 tops
5 Drum Rack

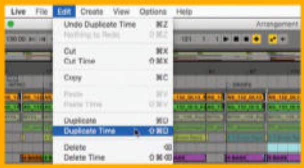
FOLD IT UP

For a quick tidy-up of the Arrangement View, Alt/Option-click one track's fold button to fold all the tracks in your set. Find it next to the track name in the track header column on the right of the screen.


Delete
Rename ⌘R
Edit Info Text
Loop to Next Locator
Select to Next Locator
Set Song Start Time Here

MARKER RESPECT

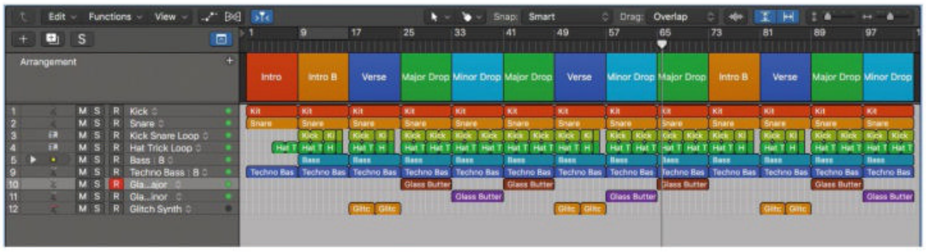
Use markers to mark where specific song sections occur. Create them by clicking a track, hitting Set above the track headers, moving the marker flag to the desired position, and renaming it.


Live
File
Edit
Create
View
Options
Help
Undo Duplicate Time
Cut
Cut Time
Copy
Paste
Paste Time
Duplicate
Duplicate Time
Delete
Delete Time

TIME TRAVEL

The Duplicate and Delete Time commands not only work on the region highlighted by the loop bracket, but move subsequent regions earlier or later, extending the track or closing up gaps, depending on which command is used.

Trying out new arrangement ideas


Edit
Functions
View
Snap: Smart
Drag: Overlap
Arrangement
Intro
Intro B
Verse
Major Drop
Minor Drop
Kick
Snare
Kick Snare Loop
Hat Trick Loop
Bass | B
Techno Bass | B
Gla...ajor
Gla...inor
Glitch Synth

Logic Pro's Arrangement track is a real timesaver when it comes to song construction

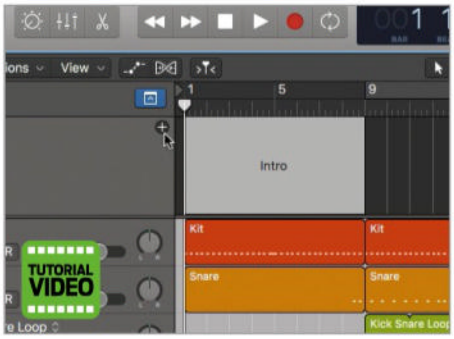
Apple's Logic Pro X has evolved into a true production powerhouse since the company acquired it from Emagic, back when dinosaurs roamed the Earth. One of the many developments that have been added to the app over the years is the addition of a dedicated Arrangement track, intended to make it easier to come up with new arrangement ideas with the minimum of fuss and bother, by literally picking up chunks of your song up and moving them around on the timeline into whatever order you like.

The Arrangement track works by treating song sections as single entities to be relocated at will – picking up a section collects all of the regions on all of the tracks contained vertically within it. Not only is this great for playing around with arrangements of your own tracks, it's also a brilliantly simple way of creating extended versions of songs you like – drag the MP3 into Logic, sync it to the grid using the Adapt Project Tempo to Region Tempo command, then get rid of that annoying trumpet solo and extend that catchy outro chorus to your heart's content!

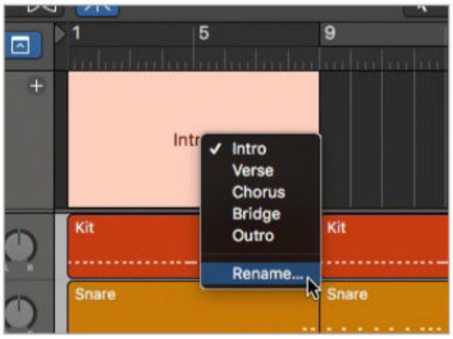
To see the Arrangement track, you first have to make sure it's set to be visible in the Global Tracks area that appears above the regular track headers in Logic's main window. To do this, simply hit the Alt-G key command to reveal the Global Tracks Configuration popup, and tick the Arrangement checkbox. Once the track is visible, you can reposition it vertically in the global track list (so you can situate it directly above the main window if you like), and make it taller by dragging the divider above the track headers downwards.

> Step by step

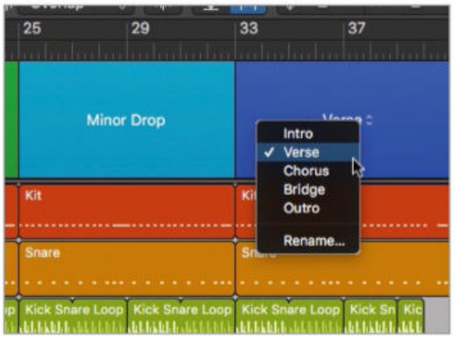
4. Using Logic's Arrangement track


View
Intro
Kit
Snare
TUTORIAL VIDEO
Kick Snare Loop

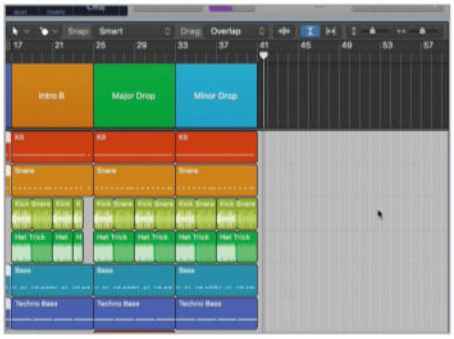
1 > Open **Global Tracks** to reveal the Arrangement track. Hit the **+** button in order to create a new arrange marker, and drag the right edge out to the required length of your first song section. The default length for a new arrange marker would be eight bars.


✓ Intro
Verse
Chorus
Bridge
Outro
Rename...
Kit
Snare

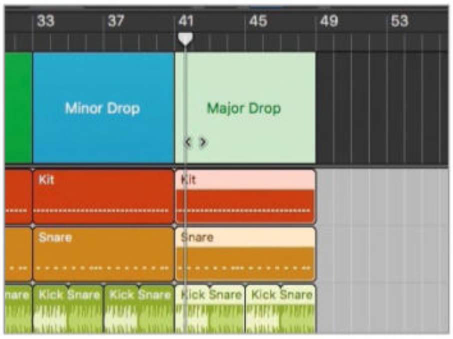
2 > New markers are titled automatically from a menu of existing names. Choose one that suits, or rename it by choosing **Rename** from the menu. You can also colour code regions by pressing **Option-C** and assigning a colour to each highlighted marker.


Minor Drop
Intro
✓ Verse
Chorus
Bridge
Outro
Rename...
Kit
Snare
Kick Snare Loop

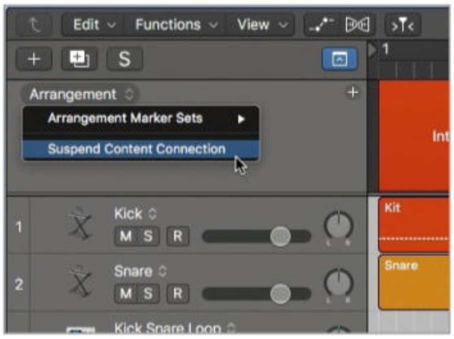
3 > Construct the rest of your Arrangement track by hitting the **+** button, dragging new markers out to the required lengths and renaming them as you go. Each new marker will always appear 'glued' to the right-hand edge of the previous marker.


Intro B
Major Drop
Minor Drop
Kit
Snare
Bass
Techno Bass

4 > Now for the cool bit. To move a whole section from one place in the song to another, simply drag it along the Arrangement track to its new location. The other markers will snap together to fill the gap so that the new arrangement flows seamlessly.


Minor Drop
Major Drop
Kit
Snare
Kick Snare

5 > To copy a marker – in order to create another chorus, say – hold down the **Option** key while dragging. The new copy will be placed before the start of the marker over which you release it.


Edit
Functions
View
Arrangement
Arrangement Marker Sets
Suspend Content Connection
Kick
Snare
Kick Snare Loop
Kit

6 > Delete an arrange marker by hitting **Backspace** twice – first to delete the regions below it, then the marker itself. To delete markers without deleting the regions of the song that are associated with them, select **Suspend Content Connection** before hitting the button.

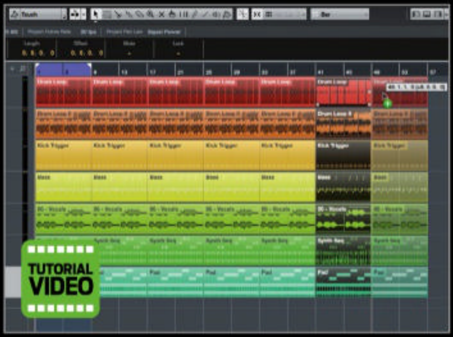
30 fps
Project Pan Law
Equal Power
Bar
1/16
49.4
50
51
52
RhythmGTRs1-02
RhythmGTRs1-02

Song-building tricks in Cubase

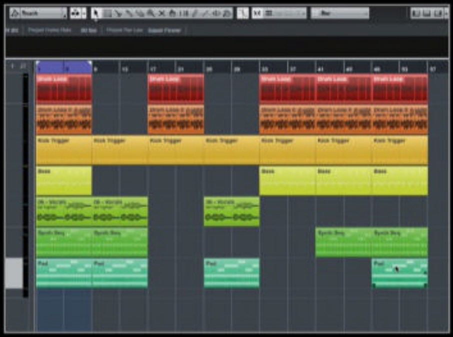
Steinberg's Cubase can rightly be thought of as the founding father of the linear timeline DAW. The first version appeared on the Atari ST way back in 1989, ushering in the standard blocks-on-a-timeline song arrangement approach so familiar to us all today. So, you'd expect all the necessary tools for flinging songs together in the traditional way of cutting, pasting and moving blocks of audio and MIDI data around the screen. However, there's an additional trick up Cubase's sleeve when it comes to trying out new arrangement ideas, and it harks back to the numerical, pattern-based methods employed by its erstwhile rival, Emagic Creator (the ancestor of Logic Pro X). Combining the best of both approaches, Cubase's Arranger Track enables you to define regions of your song as named Arranger sections that can then be strung together into a list of events. You can swap regions around any way you like, and once the Arranger Track is activated, the program will play them back in the assigned order. Ideas can be saved and compared quickly and easily to determine whether or not that extra four-bar tag works coming out of the second chorus into the bridge, for example.

> Step by step

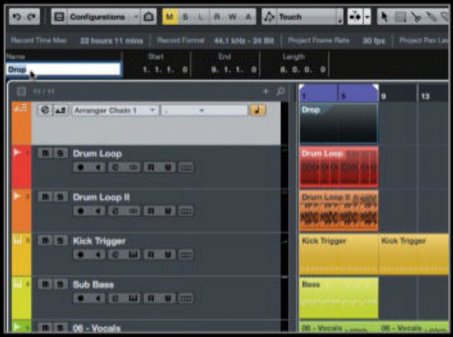
5. Using Cubase's Arranger Track


TUTORIAL VIDEO

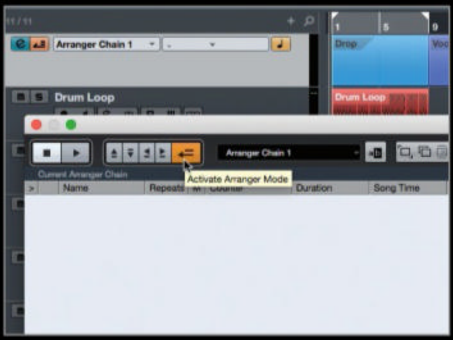
1 > Here we have a simple track made up of beats, a bassline, a vocal sample and a couple of synths. It's essentially an eight-bar loop at the moment, so to thrash out an arrangement, we need to define some sections. We start by selecting all regions in the loop and repeating the whole thing a few times.



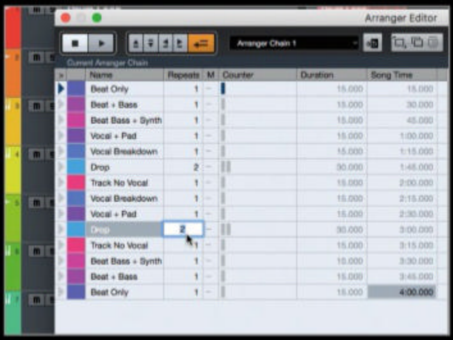
2 > Now we go through each new section and remove a few regions to create multiple versions of the loop made up of different combinations of parts. For example, here we've made one that just includes vocal and synths, another with just the beat, a third with only the vocal and pad, and so on.


Configurations
Drop
Drum Loop
Drum Loop II
Kick Trigger
Sub Bass
06 - Vocals

3 > Next, select **Project » Add Track » Arranger** to create an Arranger track (you can only have one per project). With the pen tool, click and drag along the Arranger track for the length of the first section. This creates our first Arranger region. Click the **Name** field in the upper left corner and type in a suitable name.

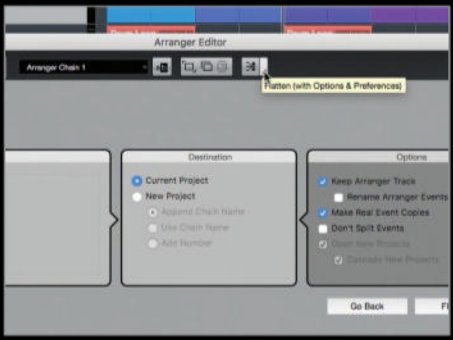

Arranger Chain 1
Drum Loop
Activate Arranger Mode
Current Arranger Chain
Name
Repeats
Duration
Song Time

4 > Continue to define and name regions for the remaining sections in the project, then click the Arranger track's **e** button to bring up its editor. You should now see a list of the defined sections or 'Arranger Events' in the right hand column. Click the **Activate Arranger Mode** button to enable the Arranger Track.


Arranger Editor
Arranger Chain 1
Current Arranger Chain

Name	Repeats	M	Counter	Duration	Song Time
Beat Only	1	–		15.000	15.000
Beat + Bass	1	–		15.000	30.000
Beat Bass + Synth	1	–		15.000	45.000
Vocal + Pad	1	–		15.000	1:00.000
Vocal Breakdown	1	–		15.000	1:15.000
Drop	2	–		30.000	1:45.000
Track No Vocal	1	–		15.000	2:00.000
Vocal Breakdown	1	–		15.000	2:15.000
Vocal + Pad	1	–		15.000	2:30.000
Drop	2	–		30.000	3:00.000
Track No Vocal	1	–		15.000	3:15.000
Beat Bass + Synth	1	–		15.000	3:30.000
Beat + Bass	1	–		15.000	3:45.000
Beat Only	1	–		15.000	4:00.000

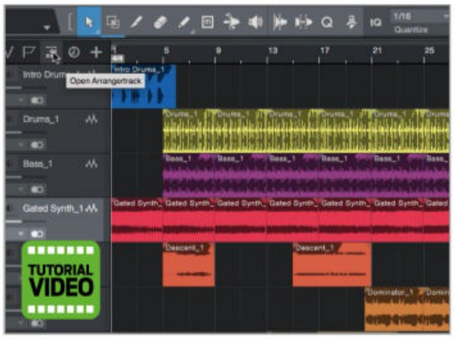
5 > Double-clicking or dragging any of these events into the left hand column places them into the current Arranger chain. If you hit **Play** with the Arranger active, the sections will play in the specified order. Type numbers into the **Repeats** column to set how many times that section will play back before moving on to the next event in the list.


Arranger Editor
Arranger Chain 1
Flatten (with Options & Preferences)
Destination
Current Project
New Project
Options
Keep Arranger Track
Make Real Event Copies
Don't Split Events
Go Back

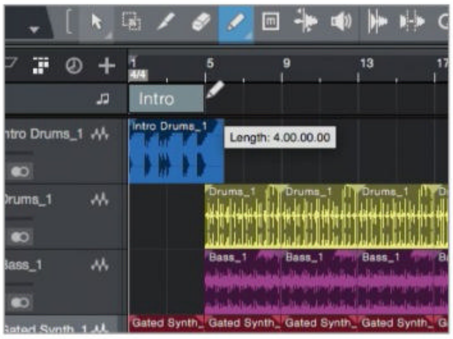
6 > When you've arrived at an arrangement you like, you can make it permanent by clicking the **Flatten** button. This translates the order of events into a regular layout of regions in the existing project, or exports it out to a new project. There are also options to keep the Arranger Track active in the rendered project, or remove it after flattening.

> Step by step

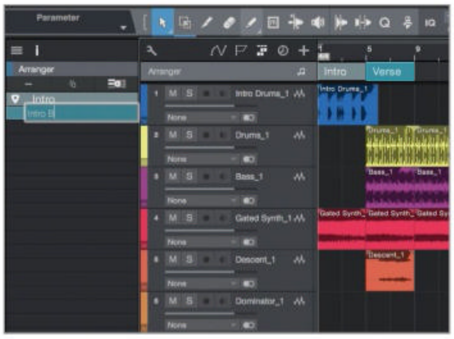
6. Using Studio One's Arranger Track


Open Arrangertrack
Intro Drums_1
Drums_1
Bass_1
Gated Synth_1
Descent_1
Dominator_1
TUTORIAL VIDEO

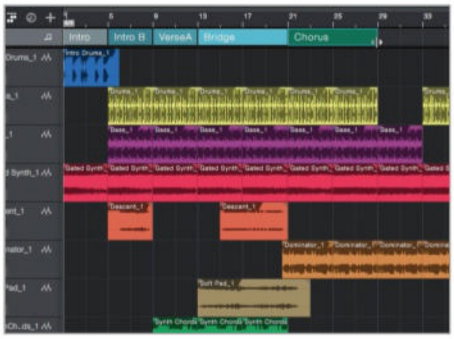
1 > The Arranger Track in PreSonus Studio One is a bit like a hybrid of the versions found in Logic Pro and Cubase. The first step to using it is to call it up by clicking its activation button in the toolbar. This makes it visible above the timeline.


Intro
Intro Drums_1
Length: 4.00.00.00
Drums_1
Bass_1
Gated Synth_1

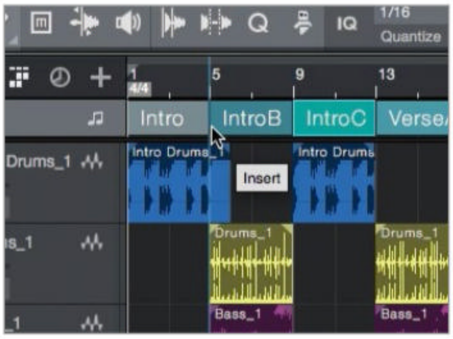
2 > To create an Arranger region, select the **Paint** tool and drag from the start point to the end point of the section of your song. A new region will be created with a default name that you can change to whatever you like.


Parameter
Arranger
Intro
Verse
Intro Drums_1
Drums_1
Bass_1
Gated Synth_1
Descent_1
Dominator_1

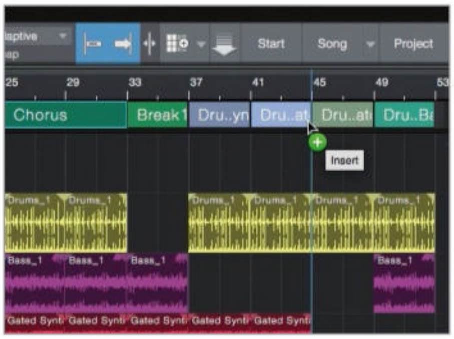
3 > To change the name of the region, click the Arranger Track's header to reveal the inspector panel on the left of the screen. You'll see your new region at the top of the event list. Double-click its name and type a new one.


Intro
Intro B
VerseA
Bridge
Chorus

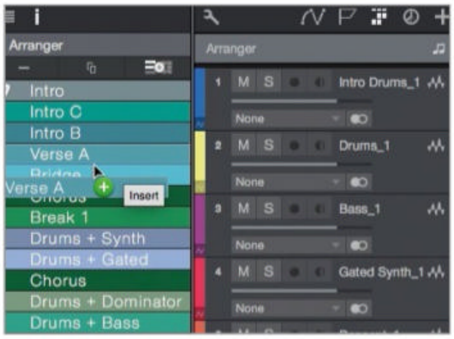
4 > Continue creating regions to fit the structure of your project in its current state. You can drag the edges of an existing region to resize it without affecting the content in the tracks area, but don't try to drag them around at this point, as any content below will also move.


1/16
Quantize
Intro
IntroB
IntroC
Verse
Drums_1
Intro Drums
Insert
Bass_1

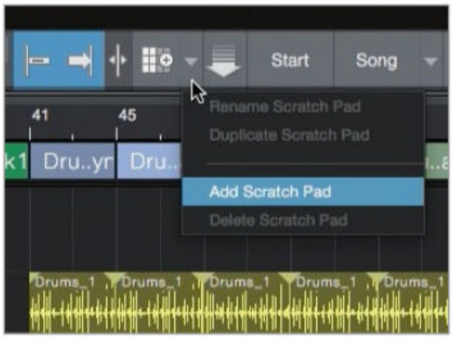
5 > Once you've built up a track full of Arranger regions, there are two ways to move them around. The first is to drag them to new positions within the Arranger track. A helpful tag appears to let you know whether you're about to replace an existing section or insert the one you're moving before or after it.


Start
Song
Project
Chorus
Break1
Insert
Drums_1
Bass_1
Gated Synth

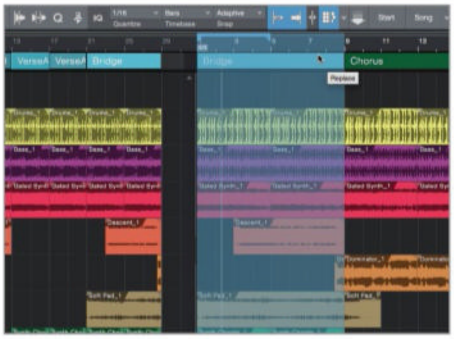
6 > When a region is moved, all the content below it moves to the corresponding location. In order to copy a region instead of moving it, simply hold down the **Option** key while dragging. Hitting the **Backspace** key deletes the selected region but not its associated content.


Arranger
Intro
Intro C
Intro B
Verse A
Bridge
Insert
Break 1
Drums + Synth
Drums + Gated
Chorus
Drums + Dominator
Drums + Bass
Intro Drums_1
Drums_1
Bass_1
Gated Synth_1

7 > The second method of rearrangement involves the Event List in the Inspector. You can rearrange the order in which the regions that appear here are played back by moving and copying them in a similar way to how you would usually do it in the Arranger Track.


Start
Song
Rename Scratch Pad
Duplicate Scratch Pad
Add Scratch Pad
Delete Scratch Pad
Drums_1

8 > Studio One has a final trick up its sleeve in the form of Scratch Pads, which allow you to try out new ideas in a separate area without affecting the main project. Create a new one by hitting this button in the upper right corner.


VerseA
Bridge
Chorus
Replace

9 > Drag sections from the main area's Arranger track into the Scratch Pad's Arranger Track to copy them into it. These can be messed around with however you like without affecting anything in the main area, giving you free rein to experiment.

Using transition effects

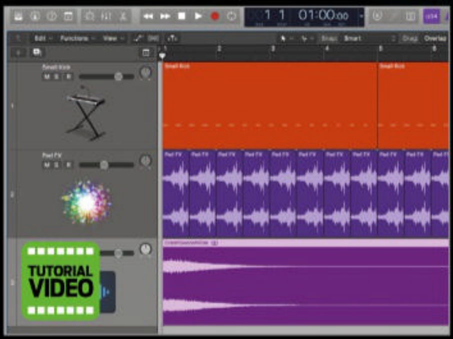
Putting an arrangement together by assembling sections like building blocks is the accepted way of creating songs on a computer, and for good reason – it works! Like most things, though, there's a certain knack to doing it well, and simply sticking a bunch of regions together so that they play back in a certain order is inevitably going to sound a little mechanical, unless you apply a little extra attention around the edges to finish things off. Putting a bit of thought into the points where the sections actually join together can make a huge difference to the overall flow of the finished song, accentuating the dynamics of an arrangement, and helping it sound like it isn't just a bunch of sections arbitrarily jammed together. There are plenty of transitions and effects to be found in sample libraries, or amongst the treasure trove of sounds that come with your DAW; or you can create your own from scratch in the form of synth whooshes or drum fills. Whatever techniques you use, effective transitions glue everything together, so that your arrangement not only sounds more like a finished piece of music but also keeps the listener engaged along the way.

COMPUTER music
VOL. 41
TRANSITION TOOLS
TRANSITION TOOLS

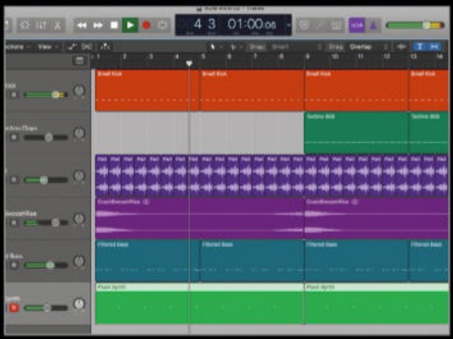
Many sample packs help with transitions, some given away with *Computer Music* magazine

> Step by step

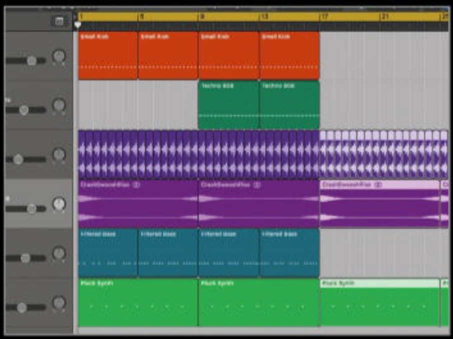
7. Building a dance music intro



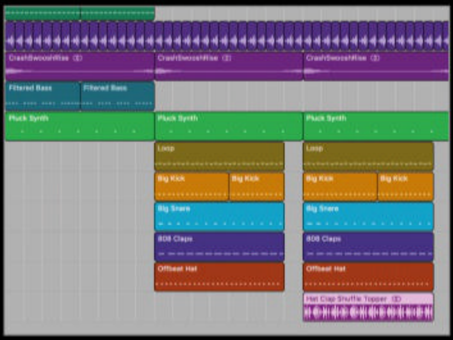
1 > A typical club track's intro can last around a minute, so to keep things evolving, we can build things up by adding new elements every eight bars. Here we've got a 128bpm eight-bar section made up of a compressed kick drum, an ambient pad effect, and a crash/swoosh effect placed at the start of the section (also reversed at the end).



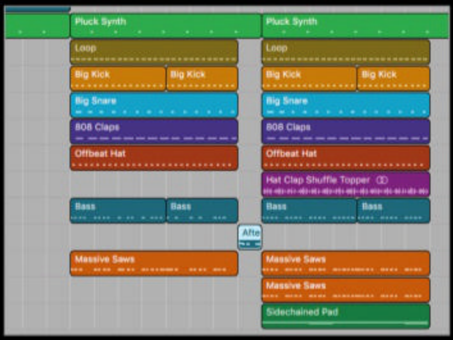
2 > We add some musical elements right from the off – a band-pass filtered version of the first bar of what will be our main bass riff, and an offbeat plucked synth note. Let's copy this whole chunk to give us 16 bars in total, and add reverbed 808 claps doubling the kick drum part to the second eight bars.



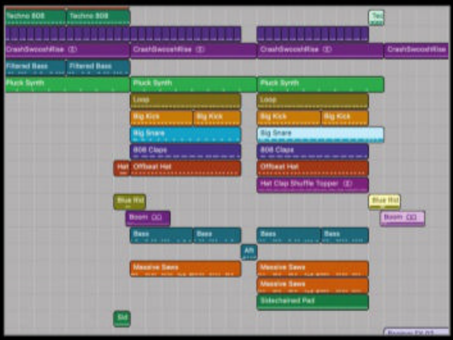
3 > We now have one 16-bar section, so let's create another, more instrument-heavy 16 bars to complete our one-minute intro (32 bars lasts for one minute at 128bpm). We start by copying the looped pad and swoosh effects, together with the pluck synth, across twice to total 32 bars, leaving the filtered bass, claps and compressed kick in place.



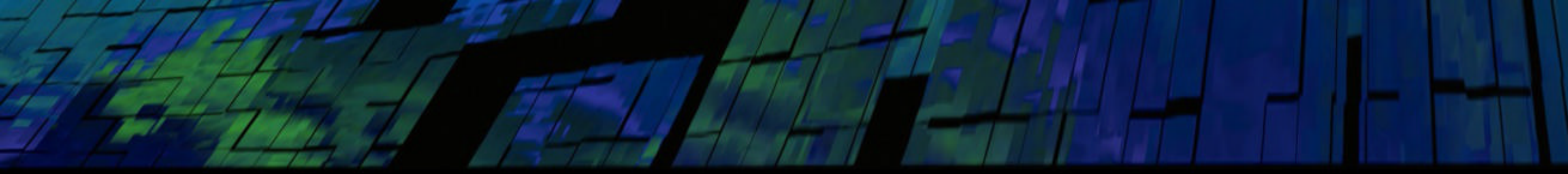
4 > The new drum parts for this section include a bigger kick drum, a kick-snare loop, a big snare doubled with an extra track of claps, and an offbeat, eighth-note hi-hat. These last only seven bars in each of the last two sections, leaving gaps at the ends for fills to be put in place. The last section adds in an additional hi-hat/clap loop.



5 > In this section, we introduce the full, unfiltered bass part and add the drop synth hook. This is reinforced in the last eight bars by an extra synth and a sidechained pad underpinning the chords. We link the two eight-bar sections by inserting a bass riff – with automated filter cutoff – in the gap at the end of the first section.



6 > The transition between the two halves of the intro is enhanced by opening the filter on the bass part and adding a swelled pad chord. We mute the looped pad in the last bar of each of the last two sections, while in the last bar a four-beat snare fill with a heavily-reverbed last beat precedes a boomer effect that introduces the verse breakdown.



More tips for breaking out of the loop of doom…

01 REMIX YOURSELF

Get some self-induced inspiration by taking one of your own songs, stripping away the music, then coming back after a day or two and remixing it. Listening to the vocal acapella after a while may help distance you from the original version enough to come up with something new. As it's your own song, you can then choose to either keep the original vocal or replace it, then write a completely new song over the top of the new backing track.

02 JAM SESSION

Your computer is a powerful recording device with acres of hard-disk space, so why not make the most of it and record long synth 'jams' to audio? If you're lucky, this can capture some great moments, creating a wealth of inspiring material that can organically influence arrangement decisions. Chop these nuggets out and use them as one-off ear-candy moments to keep your arrangement fresh.

04 BUILDING BRIDGES

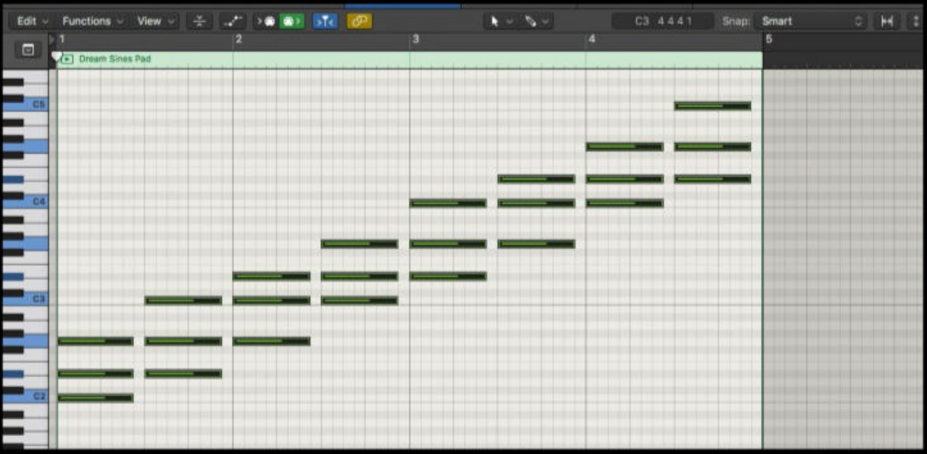
Make a whole new section for your song by copying an existing section, dropping out the drums and just changing one chord. This worked well for the Chainsmokers in their hit, *Side Effects*: they took the prechorus chords, swapped a Cm7 for an Fm7, and hey presto! – a bridge section was made! When the chorus re-enters, a new vocal melody over the existing chorus track keeps things fresh.

05 SOUND ADVICE

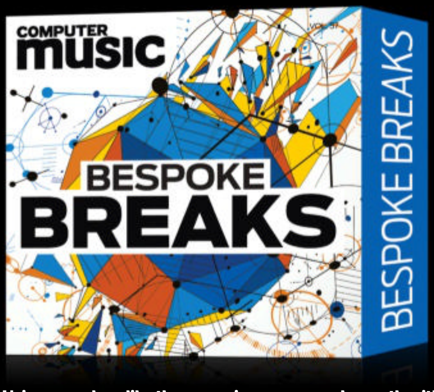
As well as the structural side of things, there's a lot that can be done with the instrumental parts you use (or don't use) in your track to keep things interesting, and new sounds are always inspiring. Copy and paste the drums from your solitary eight-bar loop, dial up a new synth or a set of presets that you rarely use on one of your existing synths, or strap a seldom-used plugin over the channel and use the new sound to inspire a fresh part.

03 INVERSION THERAPY

Chord inversions are your friends – you can fashion a decent prechorus by inverting the verse chords so that they play higher up the keyboard as the section progresses. Simply playing the same chords in different positions on the keyboard provides variety without actually changing the chords themselves.



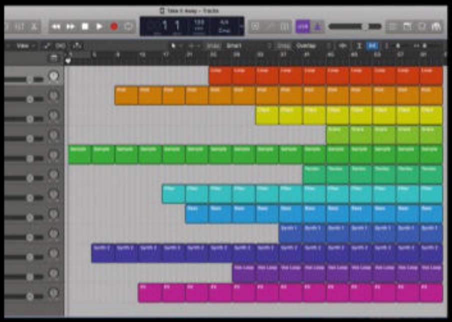
Believe it or not, all of these are C minor chords – they're just inversions going up the keyboard



Using samples – like the ones given away each month with *Computer Music* – can prove inspirational

06 RISER ABOVE IT

When it comes to getting hold of risers and transition effects to keep your arrangement moving, there's absolutely nothing wrong with plundering sample libraries and other resources. What's more, you don't have to use straight-up risers as-is – instead, try using a sample of a long cymbal crash or noise 'downlifter', flip the audio back to front with your DAW's reverse function, then nudge the reversed audio into place on the timeline. Fade and shape the swell's volume for instant 'whipping' effects.



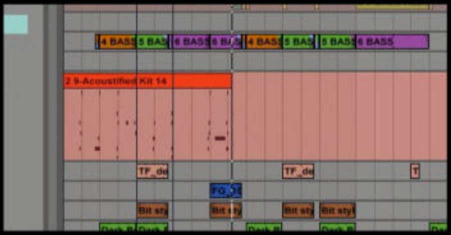
Subtractive arrangement might make your track look like *Breakout*, but it's a reliable, easy technique

07 TAKE IT AWAY

Kick it old-school with subtractive arrangement! This tried-and-tested method dates from the very earliest versions of Cubase and other linear-based DAWs, and it still works just as well today. Start with a looping section of four or eight bars that represents the busiest section of your song – usually the chorus. Duplicate this region along the timeline to form a grid of regions lasting the length of the song, then work through from the intro section, removing or muting unwanted parts. Keep going until a defined arrangement starts to appear, then refine the transitions.

08 MAKE A PASS

If you're using eight- or four-bar sections as building blocks to sketch out the foundations of your arrangement, run a few single-pass overdubs all the way down to 'cement' them together. These could be things like drum fills and cymbal crashes, vocal adlibs, keyboard riffs, live knob twiddling on an analogue synth or MIDI controller, etc – basically, any track recorded as a continuous performance that infuses your song with unique, one-off moments, contributes to the development of the track and makes it evolve as it plays. This will keep the listener interested and reduce the repetitiveness that block-based arrangements can sometimes suffer from.



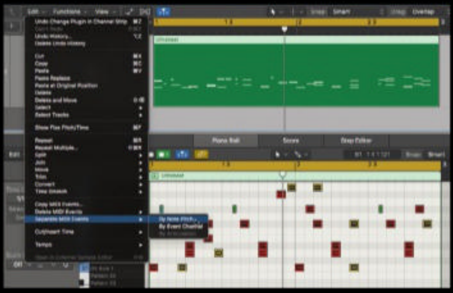
Overdubbing passes of fills, synth edits or other sonic effects can liven up grid-based arrangements

09 GET HANDS-ON

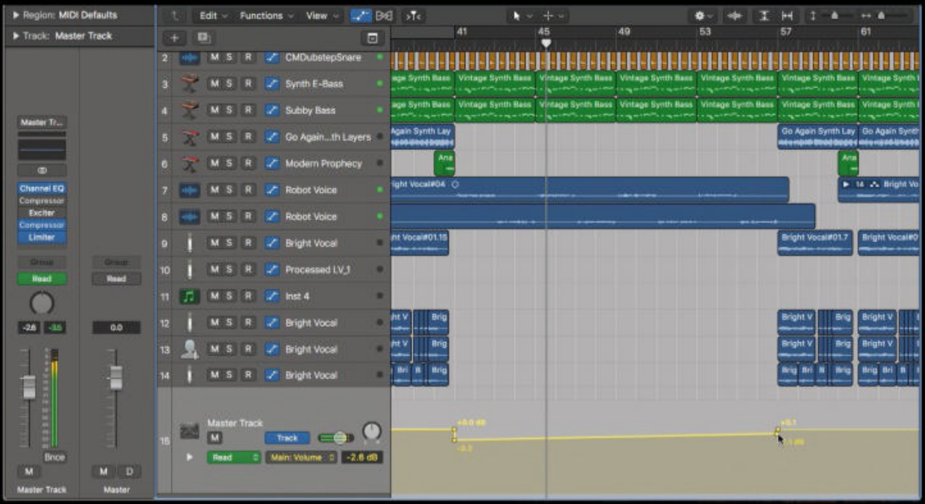
If all you've got is a repeating eight-bar loop that you can't break out of, try using automation as a performance tool. Copy and paste your loop into a three- or four-minute long block of repeats, then assign the volume levels of eight of the most prominent tracks to eight sliders on a hardware MIDI controller. You could also assign the channel mute switches to appropriate buttons if your controller has them. Then set your DAW's automation system into Write or Touch mode, start the track playing and hit those faders. Often the live performance element of having physical controls beneath your fingers as the track plays will spark some latent creativity, and give you organic motion.

10 PARE IT DOWN

Writing a seven-minute song isn't necessarily a bad move, but there's often no need to go to great lengths – literally – to pepper your track with loads of different sections if it doesn't need them. Many current chart hits are edited down to the bare minimum, coming in at under three minutes long. Don't need that intro? Bin it and just start the track with a synth noise leading straight into the first verse. And having only one singalong chorus at the end has the effect of making your listeners want to play the whole thing again just to get to that bit – and that can't be bad, can it?



Separating multiple drum kit elements out to individual tracks will give you added arrangement flexibility



Subtle variations in dynamics can help balance the relative levels of builds and drops

11 DYNAMIC IMPACT

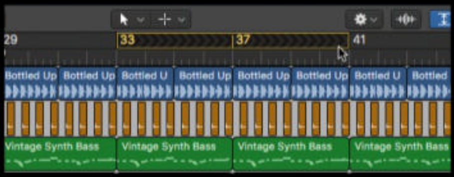
If your drop is lacking in impact, try varying the dynamics of the track subtly between the drop and preceding build. Use automation to drop the overall level of the track by 1-3dB at the start of the build, maybe increasing the volume of the impact effect on the first beat to compensate for the sudden change in level. Then ramp the level back up by a dB or so during the build, before snapping back to the original level on the downbeat of the drop. Boom!

12 KITTED OUT

If you're constructing song sections by copying and deleting MIDI regions, it makes sense to have a separate track for each individual drum kit sound if possible, as that not only gives you flexibility for processing during mixing, but also lets you mute and bring back in individual elements of your track more easily when arranging. If you have regions containing multiple drum events – kicks, snares and so on – on single tracks, most DAWs have the ability to separate them out onto individual tracks – such as Logic's Separate by Note Pitch command.

13 SKIP CYCLE

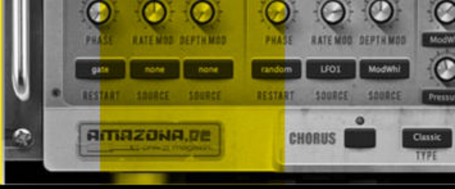
A quick way to check out an arrangement idea without actually changing anything is to use your DAW's 'skip cycle' mode. This is where, instead of looping the cycle range, the playhead jumps over it, missing it out entirely – a good move if you want to see how the chorus sounds coming in straight after the verse, skipping the prechorus, for instance. Most DAWs have a version of this – for example, in Logic Pro, just hold down the Cmd key while dragging to set the range; or in Cubase, just swap the left and right loop locators around.



Skip cycle does what it says on the tin: it misses out the cycled section and skips to the next bit

14 LISTEN AND LEARN

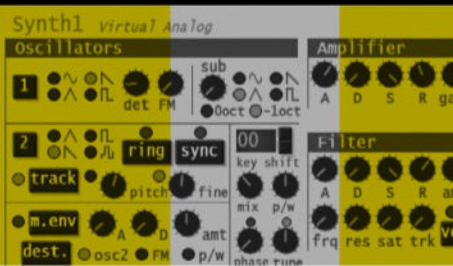
Finally, analyse the arrangements of some of your favourite tracks. Listen to what other producers have done and try to figure out the mechanics of the track and why it works the way it does. The more you do this, the better you'll get at pinpointing the minor details that, when added together, make a big difference. To get super-analytical, import an audio file of the track into your DAW, and use markers to mark out the sections. Then you can flick between them to see how the song develops and which extra elements appear in which section.


AMAZONA.DE
CHORUS
Classic
TYPE

THE 60 BEST FREE MUSIC PLUGINS

Duration
0.400
Filter FX
Distortion

MT POWER DrumKit 2


Synth1 Virtual Analog
Oscillators
Amplifier
Filter

TYRELL N6
POWERED BY AMAZONA.DE

Crystal
soft synth

We've included many free plugins with this guide for you to use to produce music, but there is also a whole world of other free music software out there. Let's take a look at the 60 best music plugins that you can download right now… for free!

> If you are new to music production, you will appreciate any free music tools you can get, so it's time to round up the best music software out there that won't cost you a dime. And it's a pretty crowded one, with a ton of freeware synthesisers, effects, drum machines, ROMplers, guitar effects and much, much more available. So much, in fact, that we have managed to round up 60 amazing free plugins for you over the following pages that could (indeed should!) transform your music making. A couple of caveats first though…

Before we enter the sometimes murky world of freeware, we should point out that it's a world that is not so essential as it once was because of this very bookazine! That's because we have supplied you with the mighty **cm** Plugin Suite – a huge and free selection of Mac and PC plugins that is available on the special Beginner's Guide To Music Production page at filesilo.co.uk. Add to that the problem of plugin bloat – the issue faced by producers these days whereby having too much choice when it comes to plugin instruments, can actually get in the way of music production – and you could argue that freeware has had its day. Yes, you *could* argue that, but we're not going to, because freeware can be great and, if you pick the right titles, can be inspiring, productive and creative, so that's what this feature is about – picking the *right*, choice titles from a sea of freeware.

So in order to give you a usable picture of this vast world of free music making we've – broadly speaking anyway – broken it down into sections covering the best 60 plugins to download for free, so over the next few pages you'll find best synths, best drum machines, effects and so on, but we've also scattered some step-by-step tutorials in there too so you can get the best from them.

Our 'rules' are pretty simple: plugins make the chart if they score well with us and sites like Plugin Boutique and KVR and, where possible, we want them to be both Mac and PC-compatible and 32/64-bit, although inevitably, some will fall down on this but still make the charts on merit.

So, yes, you can make great music with just our plugins – and we've included some of the best of those in the following charts too – but there's a world of free music software out there that you should know about, so pick and choose the best titles and download them for free. Enjoy not spending a penny.

Orig. Samples by Edgar Maguyon
KICK
SNARE
bpb

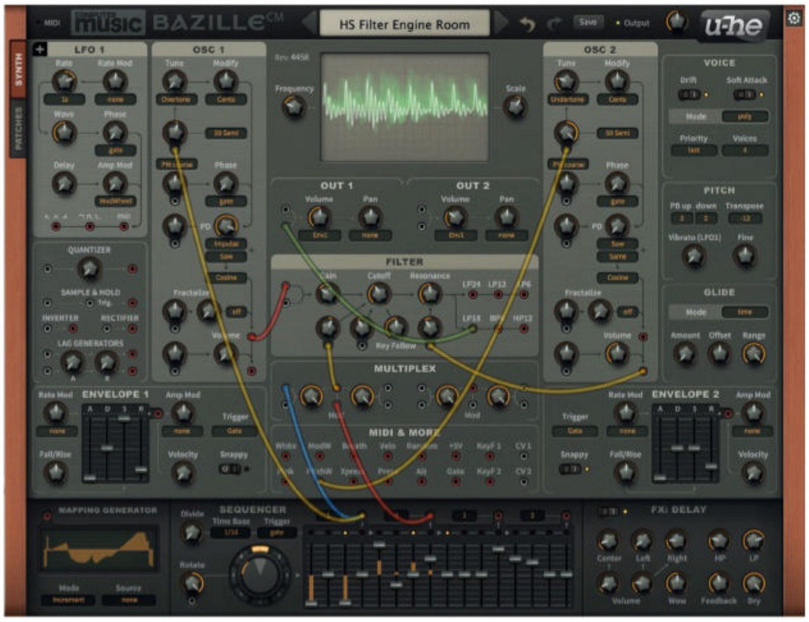
INVERT
Cutoff
Resonance
Ampl.
Freq
Filter
01: Sine
Pitch
Tune
LFO freq
Pan
Sat
Vol
1: Linear
MODE
LOUD
Amount
Distortion Curve

V1.13 64bit beta2 2014.7
Effect
Equalizer / Pan
Tempo Delay
Chorus / Flanger

SYNTH 1
LFO 1
OSC 1
OSC 2
MASTER

The 12 greatest freeware synths of all time!

We start our freeware spectacular with a roundup of the best dozen free synths of all time. We've included some oldies but goodies that should still make your hard drive, plus some from the *Computer Music* Plugin Suite.



Patchable, tweakable and an incredible sound. Quite possibly the best free synth out there

01 U-HE BAZILLE CM

MAC/PC, 32/64-BIT

We'd stress that this list is 'in no particular order', so this number one does not actually mean 'the best' and it's sheer coincidence that this entry is one of the **cm** Suite. But u-he's Bazille CM is a cracker, a patchable modular synth with a sequencer and enough power to wrestle incredible sounds from. You can download this plugin now – along with all the other plugins in the **cm** Suite – from the special Beginners Guide To Music Production page at filesilo.co.uk.

u-he.com

02 GREEN OAK CRYSTAL

MAC/PC, 32/64-BIT

Almost as old as this music production, Green Oak software Crystal has, like Synth1 after it, been a mainstay in the freeware music scene for many a year. And it's easy to understand why… at least once you look past those aged looks, as it still sounds very good.

With a relatively simple operation but powerful LFO and modulation sections, it's easy to get something complex out of Crystal. And not a synth to be pigeonholed particularly, you can also get some pretty varied sounds out of it too. Crystal has also made a great (but sadly not free) transition to the iOS platform).

greenoak.com

03 MATT TYTEL HELM

PC/MAC/LINUX, 32/64-BIT

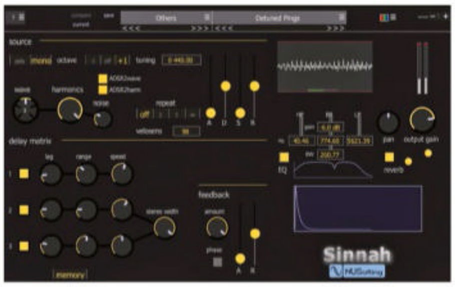
Some freeware has been around the block a few times… and looks like it. Not so Matt Tytel's Helm. With the kinds of looks, graphics, movement and click and drag pointers found on newer synths, this looks anything but free, but most certainly is. The synth features a great little step sequencer, some nice LFO options and some superb (and easy to use) effects which help take its sound up a level or two. Great looker and a great sound.

tytel.org

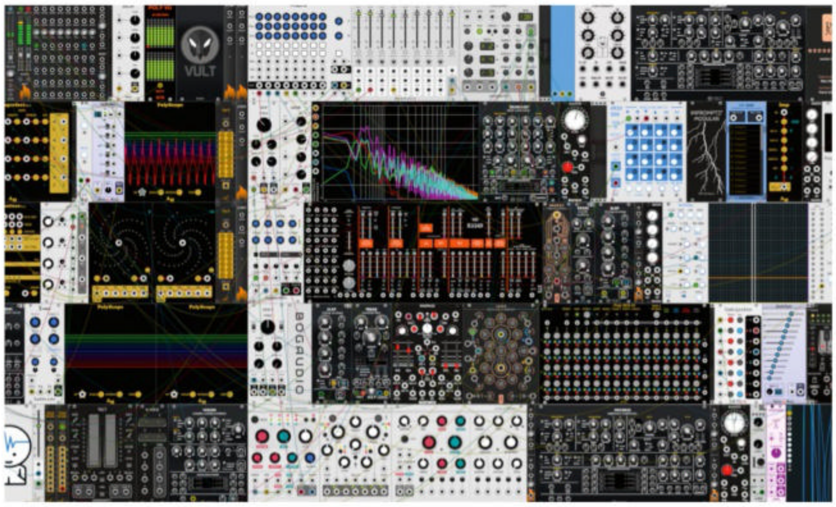
04 NUSOFTING SINNAH

MAC/PC, 32/64-BIT

Another sleek and up-to-date interface, Sinnah is a relatively modern piece of freeware, but has a slightly different take on synthesis. It has a single oscillator, albeit one



"When I look back upon my life, it's always with a sense of shame, I've always been the one to blame"



Not one synth, but hundreds of modules for you to select and assemble yourself

05

VCV RACK

PC/MAC/LINUX, 64-BIT

Now this is the synth – actually entire modular system – taking the freeware world by storm. Developed over the last few years, it's an open source modular environment, complete with dozens of add-ons developed by many developers, making it one of the most exciting, and complex free systems out there. Look out for another entire feature on it soon.

vcvrack.com

with five shapes to choose from, and an envelope to tweak. However, a 'resonant delay network' replaces the expected filter and once you start tweaking everything, you realise that the sound is as difficult to categorise as the overall synth architecture. It therefore sits within the more unusual box of freeware in our studio, but is all the better for it.

nusofting.nusofting.com/

06

SYNAPSE AUDIO DUNE CM

PC/MAC/, 32/64-BIT

Whether you like it or not, you already own this synth (unless, that is, you are borrowing this bookazine from a friend, in which case they own it). Dune CM comes free with this guide but sounds anything but free. With both VA and wavetable oscillators plus a very comprehensive modulation section, you really can get some varied and pro sounds from it. A cracking synth.

synapse-audio.com

07

TAL NOISE MAKER

PC/MAC, 32/64-BIT

Togu Audio Line have been making great plugins for many years now and were one of the earliest flagbearers for the freebie. Their Elek7ro specialised in sharp percussion and cutting basses and Noise Maker is a new and improved version of that synth, featuring effects (including reverb and delay) and loads of presets that cover a lot more bases (and, indeed basses). We're pretty sure TAL will be appearing in later pages of this feature too, such is their girth of quality.

tal-software.com

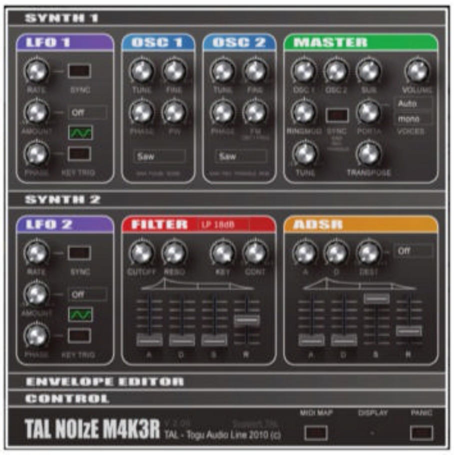
08

ACOUSTICA NIGHTLIFE

PC, 32-BIT

One that breaks all of our rules from the off; it doesn't work on a Mac and is only 32-bit. Other than that, it's great! No, the real reason this makes the cut is that it's one of the best bombastic dance freebies out there. OK, it might be dance music from a few years back – dubstep included – but we all know a few tweaks can update it. So if your machine's old, give this a go, you won't regret it.

acoustica.com



TAL – Togu Audio Line – have two decades of experience making both paid-for and free plugins. Very nice too

09

STAGECRAFT INFINITY

PC/MAC, 64-BIT

One of the newer and more unusual synths in this roundup, Infinity promises lots of features that other synths here can't deliver, including MPE (Multidimensional Polyphonic Expression) support for extra expression and a sample-based synthesis engine that helps it deliver a wide range of sounds, some acoustic, some electronic. The only catch is you might want to increase its library with paid-for additions, but there's plenty you can achieve without doing so.

stagecraftsoftware.com

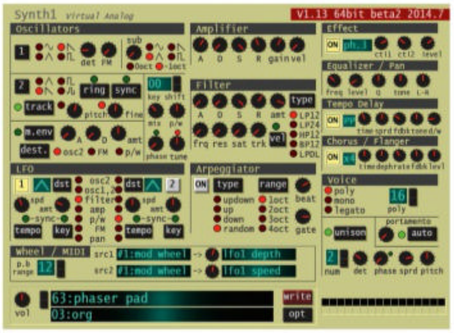
10

FUTUCRAFT KAIRATUNE

PC/MAC, 32/64-BIT

Kairatune is an out-and-out electronic music producer's dream freebie, and ideal for dance music of all genres. It can cover your leads, basses, arps, pads and beats and is "designed for musicians rather than engineers" so relatively easy to get to grips with. It wears its heart on its sleeve – and is damned good at what it does.

futucraft.com/kairatune/



Synth1 is still the number 1 synth. Albeit at number 11...

11

ICHIRO TODA SYNTH1

PC/MAC, 32/64-BIT

No freeware synth roundup would be complete without this mainstay of the free world, a synth that has propped up many a 'best of' list since its release back in the 18th century. Synth1 takes some of its features from the mighty Nord Lead 2 and while it might look antiquated, it sounds great, will run in modern DAWs and is still, incredibly, supported by its developers (albeit not in English). Still essential.

daichilab.sakura.ne.jp/index.html

12

TYRELL NEXUS 6

MAC/PC/LINUX, 32/64-BIT

Amazona and u-he teamed up to produce this synth back in 2010 but updates have kept it fresh and able to run in up-to-date DAWs. Of course, we chose it initially for the name but actually there's a great synth behind a great fascia here, similar to a Roland Juno-60, albeit with added extras. 580 presets are easily enough to demo its power and it's a worthy inclusion in our synth dozen.

u-he.com and amazona.de

12 great free beat makers

From kick designers to full-on drum machines we have all your beat-making needs catered for, free!

Manda Audio

MT Power Drum Kit 2

Mac/PC, 32/64-bit

Many freeware drums are understandably electronic in scope, but if you want a real rock feel, look no further than this. "Choose from thousands of rhythms and compose your own accompaniments," they say. And you can!

powerdrumkit.com

AudioSpillage

MiniSpillage

Mac, 64-bit

TS-808 (below) is PC only, so now Mac fans get a Mac-only classic in the form of MiniSpillage. The easy UI offers bass drum, wood drum and hi-hat options, each with different generator methods for very flexible results.

audiospillage.com

Synsonic Instruments

BD-909

Mac/PC/Linux, 32/64-bit

Just before we hit the 808 (below) there's just time to cover another Roland classic, the 909, in the form of this diminutive plugin from Synsonic. However, you only get the kick drum emulation, but it is the best kick of all time, right?

synsonic-instruments.com

Tactile Sounds

TS-808 Drum Machine

PC, 32-bit

It may not look like the best plugin here but TS-808 delivers some mean, classic drums in the style of the classic TR-808, beats behind many a classic dance tune over the last four decades. TS-808 delivers some fine emulations.

pluginboutique.com

Bedroom Producers Blog

Cassette Drums

Mac/PC, 32/64-bit

And now why not a take on ALL Roland's classics? This has three plugins in one: Cassette 606 VST, 808 VST and 909 VST with samples from the original Rolands and then resampled from a cassette deck for more warmth.

bedroomproducersblog.com

Teragon Audio

Kickmaker

Mac/PC, 32/64-bit

With four oscillators dedicated to the kick, this plugin might focus on one beat sound but this 'narrow but deep' philosophy pays dividends when you hear the thumping results.

teragonaudio.com

Sampleson

Analog Drums

Mac/PC, 32/64-bit

If it's the more liquid sound of analogue you're after, then Sampleson have a good stab with Analog Drums, which features 18 sounds, six pitch-adjustable, with kick and snare having Click, Delay, Tone and Snap controls respectively.

sampleson.com

DopeVST

Beat Machine CM

Mac/PC, 32/64-bit

Yep, it's pretty hard not to include plugins from our own **cm** Plugin Suite when they're as good as this, so we thought 'well, we'll just include them then'. So here's DopeVST's finest, which you get for free simply by reading this!

dopevst.com

Dopekitz

Rupture Lite

Mac/PC, 32/64-bit

Rupture is a 16-track virtual drum machine complete with five drum kits (West Coast, Tribeca, Ever 1da, Crunk'd 2.5 and Danger Drumz) with which you can program and route parts to individual output channels. Flexible and fun.

dopekitz.com

Distocore

Bazz::Murda

Mac/PC, 32/64-bit

This is designed for kicks of the hard variety, so could be the most important free app you download today... if you are the target 'hardstyle, gabber, hardcore, terror, uptempo or speedcore producer'. Hard indeed...

distocore.net

XILS-lab

StiX CM

Mac/PC, 32/64-bit

Forgive us a second, but here's another cracker from the **cm** Suite: Stix CM, a drum synth and sequencer all-in-one. Throw in some effects and modulation and it's one of the best freebies out there. Don't believe us? Try it yourself!

xils-lab.com

Studio Linked

Drum Pro

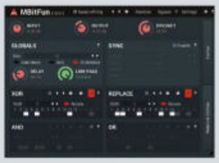
Mac/PC, 32/64-bit

Drum Pro is for producers who make everything from hip-hop to dance and has 20 kits sampled from nine classic drum machines. Yes, it is designed to tempt you to buy more, but comes with enough samples and tweaks for great beats.

studiolinked.com

12 CREATIVE EFFECTS

Forget your subtle reverbs, compressors and delays, these are as creative as instruments…



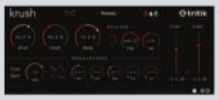
Melda Production

MBitFun

Mac/PC, 32/64-bit

Described as 'a serious tool for extreme distortion lovers' MBitFun breaks your audio down into low bit rates and then uses a variety of processes to control multiple parameters. Difficult to understand but huge results!

meldaproduction.com



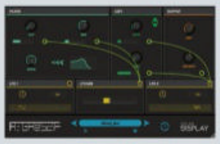
Tritik

Krush

Mac/PC, 32/64-bit

A classic in the freeware community, Tritik Krush delivers lo-fi, driven effects with a great modulation section and an analogue-modelled filter for more control and dynamics. There are presets a-plenty to demo its great sound.

tritik.com



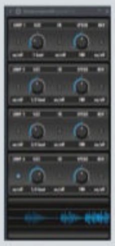
Inear Display

Regressif

Mac/PC, 32/64-bit

Where once we all hankered after a top-quality sound, Regressif concentrates on degradation, and features no less than a multimode filter, distortion, sample-rate reduction and bitcrushing. Your audio doesn't stand a chance…

ineardisplay.com



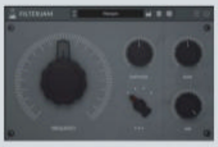
Audioblast

Instalooper

Mac/PC/Linux, 32/64-bit

It might well have been designed for live looping but Instalooper is equally at home mangling and blending loops anywhere and is great for breathing life into any kind of loops, but particularly effective on drums.

audioblast.me



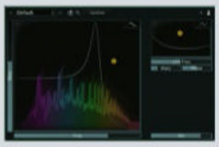
Audiothing

Filterjam

Mac/PC, 32/64-bit)

Another freeware classic, this time a monster multi-band resonant filter that specialises in ringmod-like sounds, all behind a not-so-monster interface. With just a few controls, you'll be amazed at how deep and dirty any sound can be.

audiothing.net



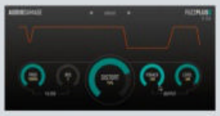
Stagecraft Software

Autofilter

Mac/PC, 32/64-bit

It's the automation that takes Autofilter into more creative territory than a normal filter, and it's the looks that also land this plugin a top 12 place. It looks and sounds every bit a pro…

stagecraftsoftware.com



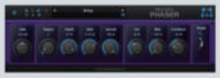
Audio Damage Fuzzplus

FuzzPlus3

Mac/PC, 32/64-bit

FuzzPlus 3 steps away from its perhaps guitar-effect roots with a great resonant filter modelled on that of the Korg MS-20 for huge swirls of distortion. It's not at Audio Damage's website but you can still download it from…

vst4free.com



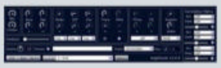
Blue Cat Audio

Phaser

Mac/PC, 32/64-bit

Designed more to emulate vintage phaser hardware, Blue Cat Audio have built enough modern twists into Phaser to bring it bang up to date so you can explore far more creative textures and territories.

bluecataudio.com



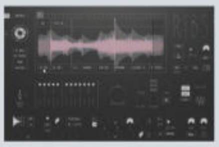
Michael Ourednik

Argotlunar

Mac/PC/Linux, 32/64-bit

Michael Ourednik's Argotlunar is a free granular processor and used 'for creating surreal transformations of audio streams' by smashing your audio up into grains and then processing them with a variety of effects. Dramatic and big.

mourednik.github.io



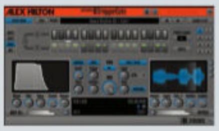
Hvoya Audio

Ribs

Mac/PC/Linux/iOS, 32/64-bit

Ribs is another granular effect with which you can 'glitch, scratch, filter, destroy and reconstruct sounds in many different ways'. It has several modes like Beats, FX, Notes and Simple, making it hugely flexible for a freebie.

hvoyaaudio.itch.io



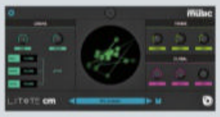
Alex Hilton

A1 TriggerGate

Mac/PC, 32/64-bit

Designed for producing the dynamic rhythmic effects found in house, dubstep, trap, and hip-hop. TriggerGate goes a few steps further with enough features and onboard effects to go to gated areas you thought were locked.

alexhilton.net



Inear Display

Litote CM

Mac/PC, 32/64-bit

What top 12 freeware list would be complete without a **cm** plugin? Litote, has four engines – each with a granulator, resonator and diffusion delay – blended with an automated X/Y pad.

ineardisplay.com

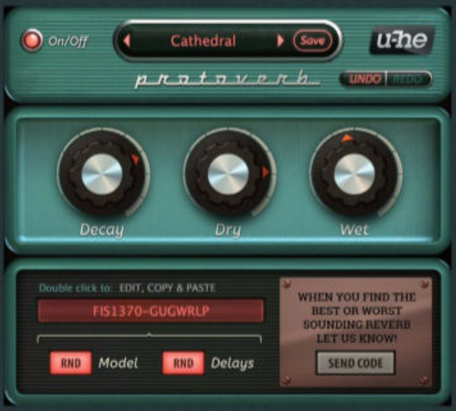
12 of the best reverb and delay plugins

Now it's time to focus on freeware reverb and delay effects. It's a varied bunch, but we think you'll find something whatever your needs, be they extraordinary ambiences, delays aplenty or just gentle shimmers for your mix...

01 U-HE PROTOVERB

MAC/PC/LINUX, 32/64-BIT

u-he developed this plugin as 'researchware' – essentially freeware to encourage the production community to get involved in its development as much as possible. They describe it as doing the opposite of most algorithmic reverbs in that rather than avoiding resonances, it builds up as many as possible to model a room, resulting in 'a very natural-sounding reverb'. Users are encouraged to share their presets, so it's a kind of global effort, which we love.



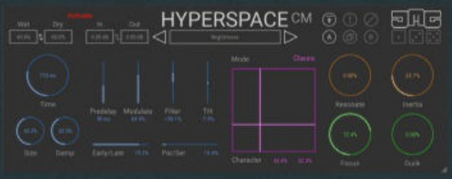
Double click to: EDIT, COPY & PASTE

FIS1370-GUGWRLP

WHEN YOU FIND THE BEST OR WORST SOUNDING REVERB LET US KNOW!

Protoverb is free, yes, but do donate your findings so we can all benefit

u-he.com



One of the most popular free plugins

02 JMG SOUND/UNITED PLUGINS HYPERSPACE CM

MAC/PC, 32/64-BIT

One of the most popular plugins we've ever had in the **cm** Plugin Suite, this algorithmic reverb is a (slightly) cut down version of JMG/United's Hyperspace plugin, but still comes with plenty of functions to keep you tweaking. Features include three different algorithm modes, nine reverb parameters plus further dynamic and effect processing. There's an onboard, hands-on XY Pad to adjust certain parameters, including the character of the modes, so, for example, vertical changes can influence the overall EQ – thicker/darker at the top and thinner/brighter at the bottom. This is a great freebie.

unitedplugins.com

Presets
OldSkoolVerb
Reverb Params
Mode
Reverb Damping
Reverb EQ
Out Gain

You want old skool? This is old skool. Or school

03 VOXENGO OLDSKOOLVERB

MAC/PC, 32/64-BIT

It's pretty fair to say that a lot of freeware is more about sound than looks and, fortunately, while Voxengo's OldSkoolVerb might be old school in terms of UI, it also has a lovely classic feel and vibe. (And actually, while we're at it, since the last time we looked at it, it's now available in four colours including our favourite above, so, you see, developers are taking looks seriously!). Like Hyperspace above, it's an algorithmic reverb and you get plate reverb, room and hall sounds which Voxengo say are 'best suited for non-percussive and soft-attack sounds like vocals, piano and pad sounds' but actually sound pretty good on a lot of other mix parts too. Also available in blue, sand and black.

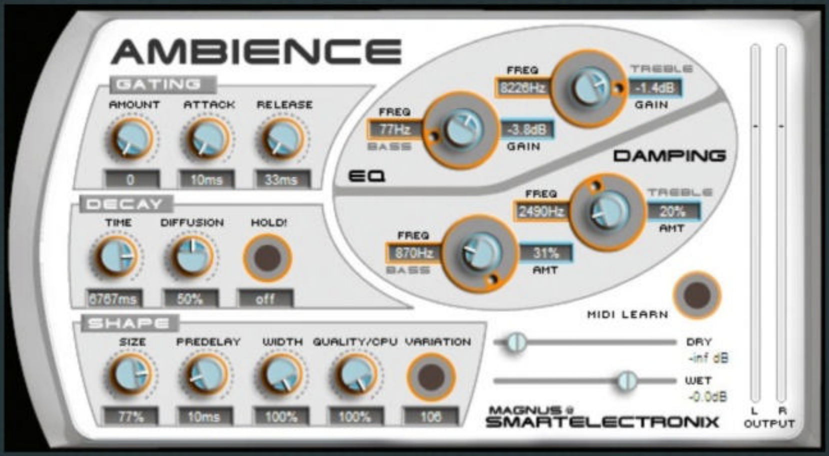
voxengo.com

04 LIQUIDSONICS REVERBERATE CM

MAC/PC, 32/64-BIT

Convolution plugins are a technically more complex types of reverb which use impulse responses to model the acoustic response of spaces or hardware devices (real and/or imaginary). They've become very popular over the last few years with several DAWs boasting their own versions, but they also exist for free if your sequencer isn't so generous. Our own Reverberate CM, from LiquidSonics, is one such convolution reverb and lets you experiment with responses from different hardware like vintage preamps, consoles or tube EQ or spaces from the real world.

liquidsonics.com


AMBIENCE
GATING
AMOUNT
ATTACK
RELEASE
DECAY
TIME
DIFFUSION
HOLD!
SHAPE
SIZE
PREDELAY
WIDTH
QUALITY/CPU
VARIATION
EQ
DAMPING
MIDI LEARN
DRY
WET
OUTPUT
MAGNUS @ SMARTELECTRONIX

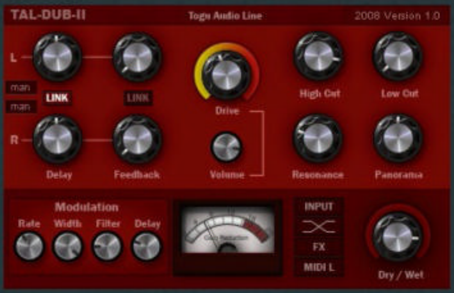
Smartelectronix's Ambience is a bit different... if you want it to be

05 SMARTELECTRONIX AMBIENCE

MAC/PC, 32/64-BIT

Ambience can be a beautiful-sounding reverb, and it can also be a quite unusual one. With features including Gate and Hold you can literally stop your reverb in full flow. It's not exactly natural, but it's a bit of a bonus if you like experimenting. And of course, you don't need to go there if you don't want to, and can just explore the lush presets and more natural side of Ambience.

smartelectronix.com


TAL-DUB-II
Togu Audio Line
2008 Version 1.0
Delay
Feedback
Drive
Volume
High Cut
Low Cut
Resonance
Panorama
Modulation
Dry / Wet

Dirty, dubby or clean, TAL's Dub 2 does it all...

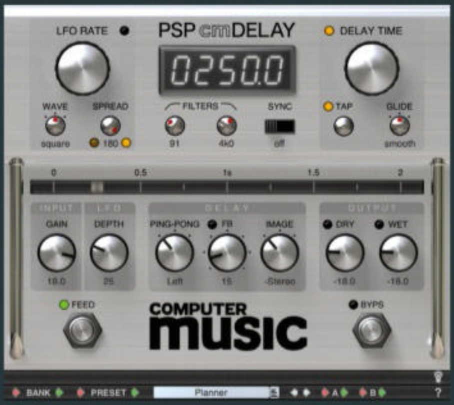
06 TAL-DUB 2

32/64-BIT - PC/MAC

32-BIT ONLY

Tagu Audio Line is back again, and this time with a simple but very effective dub delay that can be as dirty as you like, in a vintage way, thanks to a 4x oversampled distortion stage on the plugin. Direct and basic controls allow you to get to the heart of your delays, along with modulation for added flexibility.

tal-software.com


PSP cmDELAY
LFO RATE
DELAY TIME
0250.0
COMPUTER music

PSP cm Delay offers both limiter and tape delay features

07 PSP AUDIOWARE CM DELAY

MAC/PC, 32/64-BIT

One company that has been making incredible analogue-style emulations for quite a while are PSP Audioware. PSP cmDelay is based on their stompDelay plugin and features modulated delays with LFO so you can get some incredible ping pong, dub and other delays going with ease. There's also the ability to drive signals into its tape-style limiter to bring your tracks to life in a more vintage-style way, so you're effectively getting two processes for one... for free.

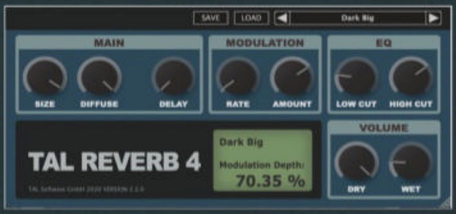
pspaudioware.com

08 TAL REVERB 4

MAC/PC, 32/64-BIT

TAL's second entry in just this list alone sees their reverb take the spotlight and, again, it's the simple but very effective approach that draws you in. You get Size, Diffusion and Predelay controls and a Modulation section plus a bunch of presets. It's a great-sounding, if basic, reverb but, with these extras, certainly stands well above many DAW reverbs.

tal-software.com


TAL REVERB 4
MAIN
MODULATION
EQ
VOLUME
Dark Big
Modulation Depth:
70.35 %

TAL's Reverb 4 can go deep with its reverbs - for free

09 HY PLUGINS HY DELAY 2

MAC/PC, 32-BIT

This is an earlier version of HY's outstanding paid-for HY Delay 4 (itself just $48) and features a single delay, decent filter options and lots of other useful parameters. You can get everything from relatively clean delays to some great lo-fi effects, so it's well worth a download.

hy-plugins.com

10 VOXENGO TEMPO DELAY

32/64-BIT - PC/MAC 32-BIT ONLY

Another great freebie from Voxengo (again, in four colours) and this one is more than just a stereo delay. It gives you rhythmic echoes that sync to your BPM and two multimode filters and tremolos allow for experimentation.

voxengo.com

11 SURREAL MACHINES MICROFUSE

MAC/PC, 32/64-BIT

This hybrid reverb/delay plugin is another basic but highly usable tool which lets you produce everything from very neat delays to atmospheric ambience, and all for the price of a certain magazine.

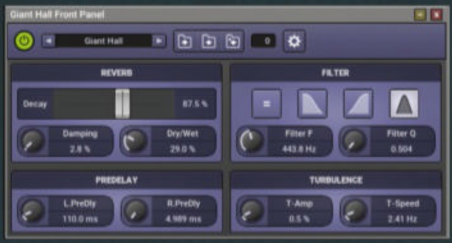
surrealmachines.com

12 MUTOOLS MUVERB

32/64-BIT - PC/MAC 64-BIT ONLY

MuVerb is part of MuTools' large MuLab download - a complete ecosystem of music making - but also available as a single download and a great 'verb for ambient and chilled genres. Indeed their whole suite is worth a look.

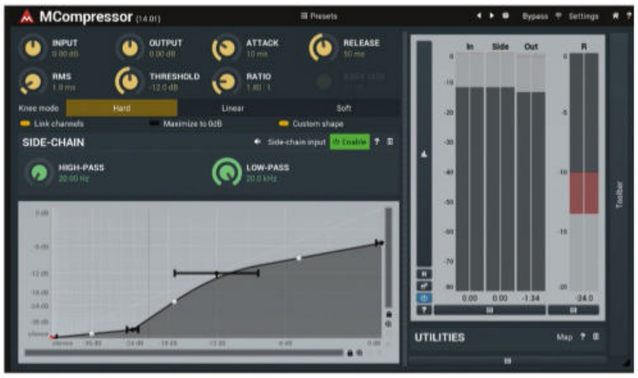
mutools.com


Giant Hall
REVERB
FILTER
PREDELAY
TURBULENCE

MuVerb is just one of a vast range of MuTools

12 of the best free dynamic/ compressors

Compression and dynamic plugins are essential for both controlling audio and as creative studio and DAW tools, and there are many varied options out there in freeware land. Here are our favourite dozen...



One of the most wide-ranging freeware compressors, MCompressor offers both transparent and dynamic action

01 MELDA MCOMPRESSOR

MAC/PC/, 32/64-BIT

If you wanted to, you could pretty much fill these pages with free Melda productions plugins, such is the depth and breadth of their collection of freebies, especially from their mighty MFree FX Bundle. MCompressor comes with a separate left/ right channel, mid/side options and an adjustable compression shape for both dynamic sound effects and a transparent sound.

meldaproduction.com

One of the earliest compressors from the cm Suite

02 EARECKON CM-COMP 87

MAC/PC, 32/64-BIT

This compressor/limiter is from the **cm** Suite of plugins and one that offers a nice slick and beefy sound. It's very easy to level out and then increase your overall audio impact, add some character and control audio. Download the plugin from filesilo.co.uk (under Bookazines/ Beginners Guide to Music Production).

eareckon.com

The Monster (left) is just one of three Slate freebies

03 SLATE DIGITAL THE MONSTER

MAC/PC, 32/64-BIT

Slate created The Monster in order to recreate the explosive sound of a Urei 1176LN compressor, as in when you press all of its compression ratio buttons at once. Like other free plugins, it is essentially an ad for a bunch of paid-for plugins which often show themselves in your DAW as proper tempters for you to part with your cash. That aside – and the fact you'll need an iLok account to use it – this is actually one of the best free compressors out there.

slatedigital.com

04 FXPANSION DCAM

MAC/PC, 32/64-BIT

Codesigned by FXPansion to be 'a realistic model of a classic console bus compressor design' DCAM delivers what we have described as an SSL-style sound, and is especially great for adding girth and weight to drum sounds, as demoed in our classic video (on the DVD). It's also good for a variety of other tasks including creative sculpting, flattening out those varied volume levels and even classic pumping compression.

fxpansion.com

06 VLADG MOLOT

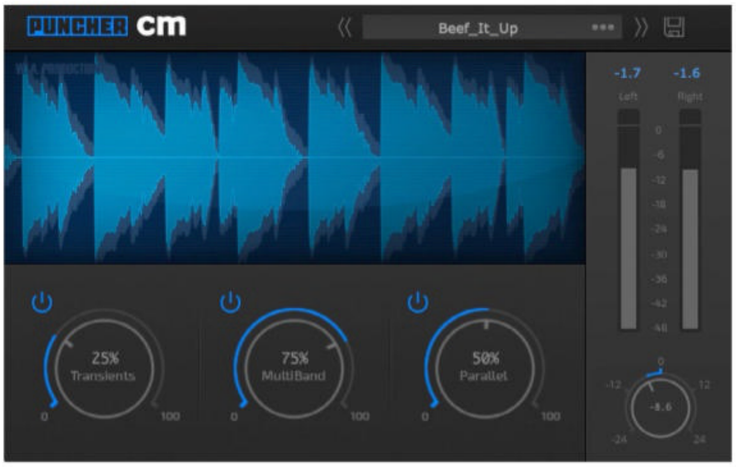
MAC/PC, 32-BIT

An older freeware plugin but one of the best for adding characterful compression (not to mention being one of the best-looking). It's not called 'the colourful compressor' for

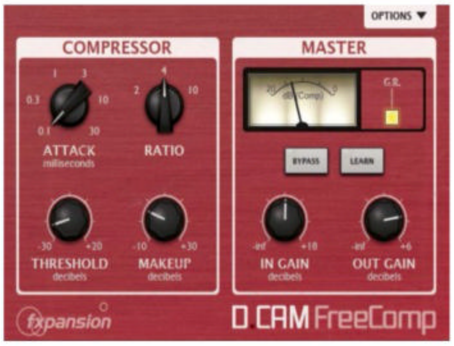
05 WA PRODUCTION PUNCHER CM

A dynamics and indeed multi-effects plugin that is designed to add power and consistency to instruments in your mix. It includes a four-band multiband compressor so you can apply discreet compression to each band, solid parallel compression and a Transients control so you can boost transients for punch. Best of all you can give it a go now and download it from filesilo.co.uk.

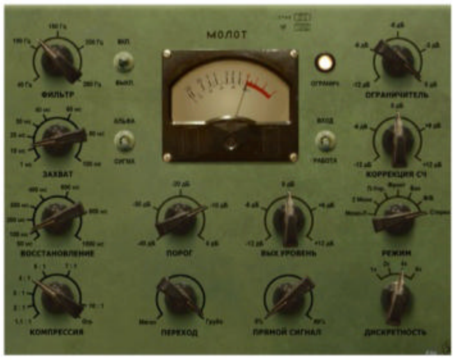
waproduction.com



Three types of dynamic effects in one free plugin



DCAM from FXPansion offers SSL-style compression



You might not understand Molot but it will sound great

nothing, although it might take some wrestling with to get the best results (yes, the UI is in Russian, although can be translated).

vladgsound.wordpress.com

07 AUDIO DAMAGE ROUGH RIDER 3

MAC/PC, 32/64-BIT

According to Audio Damage, Rough Rider is 'one of the most popular dynamics processors on the planet, with well over a half a million downloads'. Indeed, we've featured previous versions in earlier freeware roundups because it's a great option for adding pump and working with vocals and guitar.

audiodamage.com

08 IGNITE VST VICE ONE

MAC/PC, 32/64-BI)

Vice One is a handy and easy to use compressor with a choice of analogue and digital circuit designs, plenty of hands-on control, Look Ahead for smooth results, Saturation and Makeup Gain plus a Soft/Hard Knee selector. Bread and butter compression with your favourite magazine.

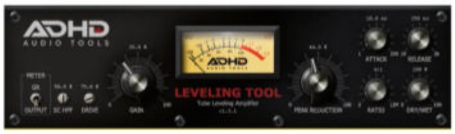
ignitevst.com

09 ADHD AUDIO TOOLS' LEVELING TOOL

MAC/PC, 32/64-BIT

AdHd Leveling Tool is, according to them, 'a Tube Leveling Amplifier inspired by the legends'. It differs from most compressors in that it doesn't feature a Threshold control – you set Peak Reduction and rebalance Gain instead – and it is great for parallel and punchy LA-2A-style compression.

audiotools.se



Legendary compression from the ADHD Leveling Tool

10 KLANGHELM DC1A

MAC/PC, 32-BIT

Classic compressors usually only had a limited number of controls so don't judge your plugin by its UI until you've tried it. This is a perfect example. Klanghelm's DC1A is a dynamics processor with just Input and Output controls (although further switches are on hand to select between Deep and Relaxed modes, ratios and more). It specialises in several compression styles but all are united by the fact that DC1A handles the process in an 'effortless' way. A great little plugin with wide-ranging results and for lots of applications.

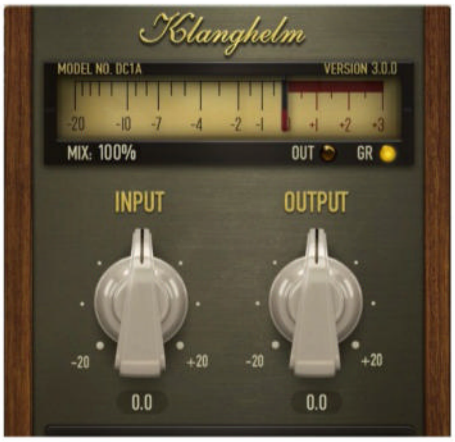
klanghelm.com

11 ACUSTICA AUDIO TAN FREE

MAC/PC, 32/64-BIT

One of those freebies where you're not entirely sure if it exists and is supported anymore but which can be downloaded at various free VST sites – so maybe grab it while you can.

acustica-audio.com



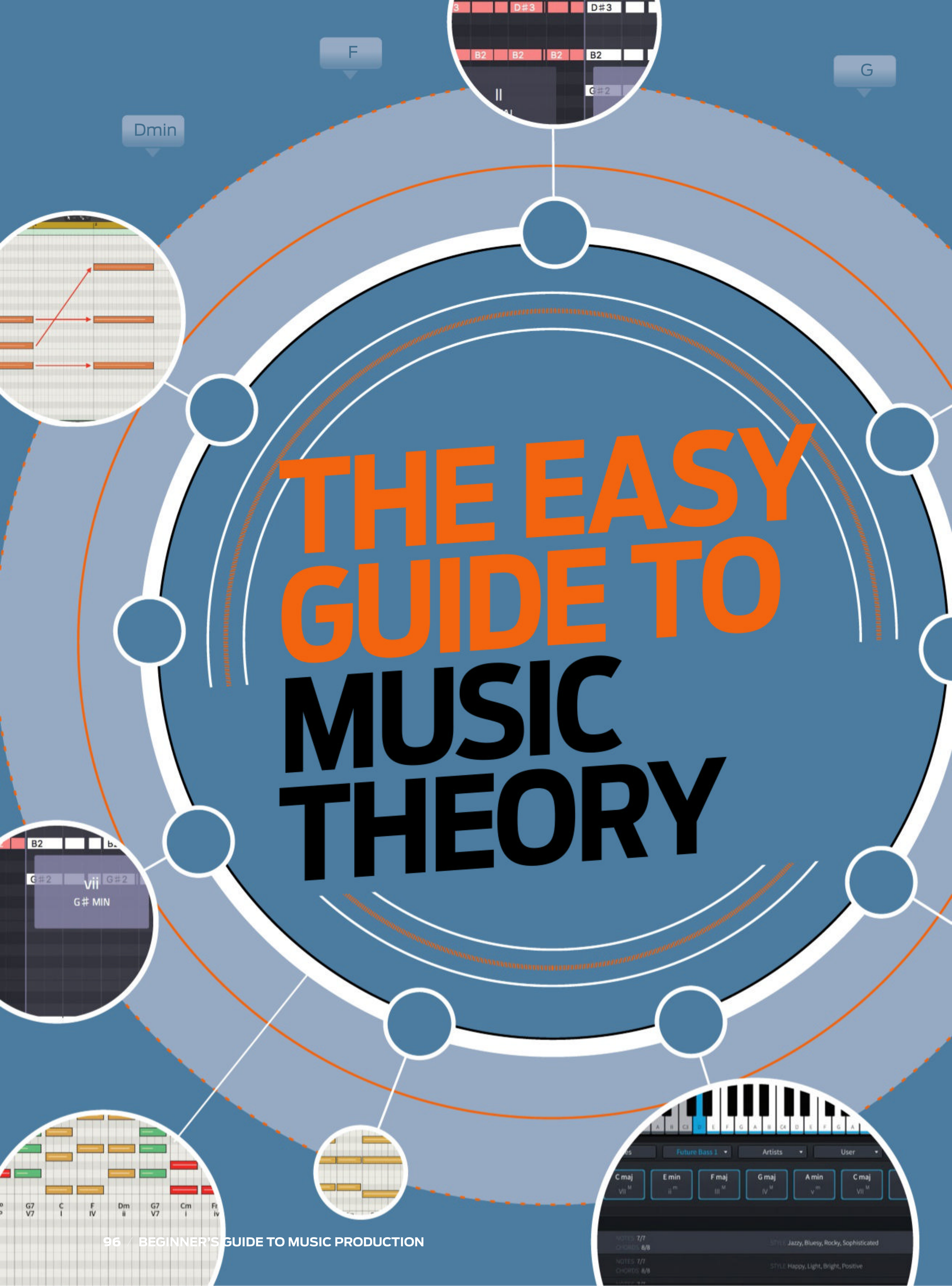
Klanghelm's DC1A offers a lot for such a little UI

12 TOKYO DAWN KOTELNIKOV

MAC/PC, 32/64-BIT

We love Tokyo Dawn's plugins. Kotelnikov is a wide-band dynamics processor and, whereas other compressors here might add character, this one is, they say, 'stealthy' in that it preserves the original tone, timbre and punch of your sound, so great for stereo bus compression.

tokyodawn.net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Future Bass 1
Artists
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C maj
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G maj
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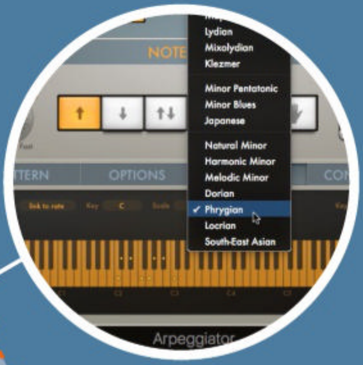
STYLE Jazzy, Bluesy, Rocky, Sophisticated
STYLE Happy, Light, Bright, Positive

THE EASY GUIDE TO MUSIC THEORY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OPTIONS
CON
Arpeggiator
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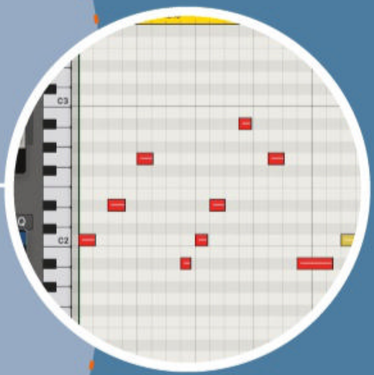
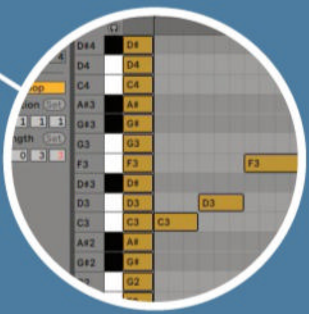
Knowing how notes 'work' is a bonus in music production, and it's easier than you might think

> The relevance of music theory as a whole to the computer musician of the 21st century is a much discussed and debated topic. With so many compositional aids and hugely powerful software on the market, and the widely-held view that the average pop song is, by definition, inherently simplistic, you could argue that there isn't really much need to know a great deal of theory. And yet, music is one of those fields in which there's always something new to learn, no matter what level of musician you consider yourself to be, so it can't be denied that a little extra knowledge is always a good thing.

So even though an in-depth music theory background is by no means essential to create great tunes, being armed with just a smattering of the basics is only going to put you in a stronger position musically, enabling you to make better, more informed production choices. So to that end, we've curated this approachable collection of bite-sized, theory-based hints and tips, gathered together by topic and aimed at precisely that – using music theory as a springboard to help you make better tunes. Progressing from beginner-level theory and basic definitions through to more advanced concepts, over the next few pages you'll find us highlighting the sort of stuff that's useful to know if you want to take your songwriting, arranging, production and even mixing to the next level. So what are you waiting for? Let's get theory-ous!

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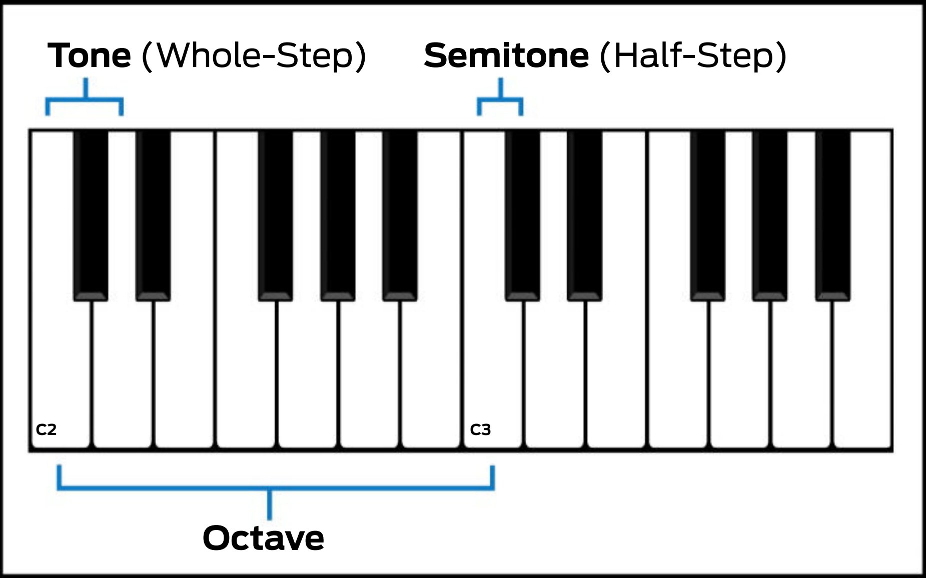
Jargon buster

Some definitions to kickstart proceedings



Octaves, tones and semitones are the building blocks of music theory

INTERVAL

An interval is the distance in pitch between two notes, and there are two possible types – harmonic and melodic. Harmonic intervals happen when two different notes are played together at the same time – in other words, a two-note chord. On the other hand, a melodic interval is between two notes played one after the other – that's a two-note melody.

OCTAVE

An octave is an interval of 12 semitones between two notes that have the same name, eg, C3 and C4. An octave spans all 12 notes on the piano keyboard.

SEMITONE / TONE

Also sometimes known as a half-step, a semitone is the distance between any two adjacent notes on the piano keyboard – the smallest possible interval. It's also the interval between the degrees of a chromatic scale. A tone, short for 'whole tone' is the same as two semitones, and is also sometimes called a 'whole-step'.

DIATONIC

With regard to scales and chords, the term 'diatonic' can literally be translated as 'belonging to', eg, the diatonic chords for C major are C, Dm, Em, F, G, Am and Bdim. They all 'belong to' the harmonised C major scale, and therefore to the key of C major.

CHROMATIC

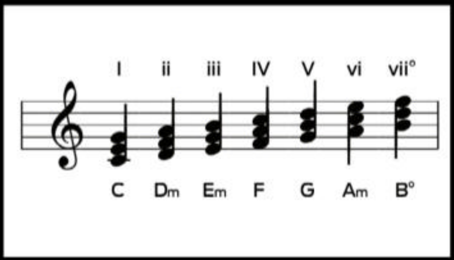
Chromatic generally refers to semitones – for instance, a semitone is a chromatic interval, and an increase in pitch of one semitone is known as a chromatic shift. The term chromatic can also mean the opposite of diatonic, used to describe any note that doesn't belong to the current key or scale.

DEGREE

The name given to a note that appears in a scale. So the note C is the first degree of the C major scale, D is the second degree, and so on. A major scale contains seven degrees, while a chromatic scale contains 12.

ROMAN NUMERALS

Using chord names to spell a chord progression is great, but what if you want to represent the same progression in any key? By using Roman numerals to label the diatonic chords (see pic), you can write out progressions regardless of the key. Major chords get upper case numerals, while minor and diminished chords are represented by lower-case numerals.



Roman numeral notation of a diatonic set

TONIC

The term given to the lowest note on which a scale is based, or the first chord in a set of diatonic chords. For example, the tonic of the C major scale is the note C, whereas in a chord progression that's in the key of C major, the tonic chord is C major.

DOMINANT

The name given to the 5th note in a scale or the 5th chord in a diatonic set. The dominant is the second strongest chord in a key after the tonic.

SECONDARY DOMINANT

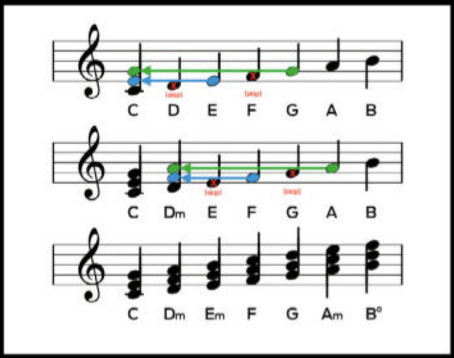
The name given to a chord based on the 5th (dominant) note of any key or scale other than the one you're currently in. Secondary dominants are often used in a chord progression to prepare the listener for an upcoming shift to a different key.

HARMONISATION

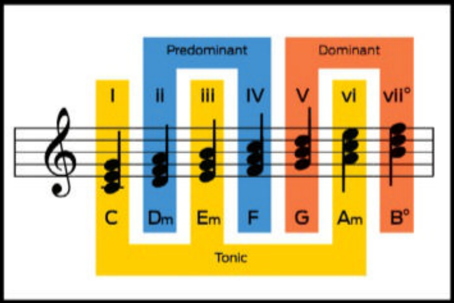
To harmonise a scale means to create chords built on each note in the scale using only notes from that scale. The easiest way to build a harmonised scale is to start with the root note, then stack up every alternate note until you've built a three-note chord

HARMONIC FUNCTION

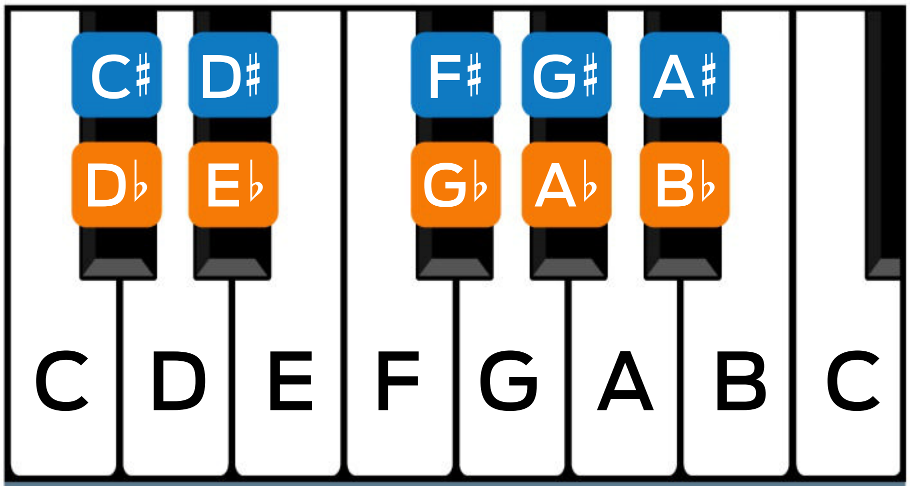
Diatonic chords can be thought of as having one of three types of job, or 'harmonic function' within a chord progression. For instance, tonic chords provide a sense of rest or 'home', while predominant chords provide a sense of instability that takes us away from home. Chords with a dominant function bring us back home by resolving to the tonic, which basically means when we hear one, we most want to hear a tonic chord next.



Harmonised scales are formed by stacking alternate notes to form diatonic triads



The harmonic functions of diatonic chords



Note names

In the Western musical alphabet, there are seven note names: A, B, C, D, E, F, and G. These note names, however, apply only to the white notes on the keyboard – so what about the black keys? Around the time the keyboard and music notation were first invented, the design of the keyboard centred around the scale of C major, which has no sharps or flats in it. When accidentals (sharps and flats) needed to be added in order to raise or lower notes by one semitone in pitch, this became the function of the black keys on the keyboard. When naming accidentals, a sharp or flat sign is placed after the note name – C♯, for example, is one semitone higher in pitch than C. Depending on the key you're working in though, C♯ can also be called D♭, D♯ can be E♭, and so on.

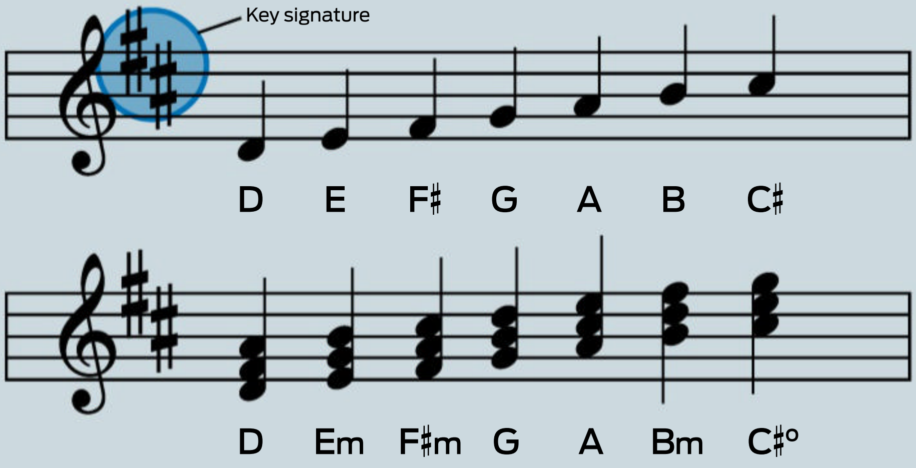
Intervals

An interval is the distance in pitch between any two notes, and each has its own name (see chart), from the smallest (the minor 2nd, equivalent to one semitone) to the largest (the major 13th, equivalent to 21 semitones). The chart shows the interval names found within an octave.

Interval name	Semitones
Unison	0
Minor 2nd	1
Major 2nd	2
Minor 3rd	3
Major 3rd	4
Perfect 4th	5
Aug 4th / Dim 5th	6
Perfect 5th	7
Minor 6th	8
Major 6th	9
Minor 7th	10
Major 7th	11
Octave	12

Keys and key signatures

When we say that a piece of music is in a particular key, it means that most of its chords and melody are taken from a certain 'parent' scale. The parent scale for the key of D major, for instance, will be the D major scale – D E F♯ G A B and C♯ – and all of the diatonic chords for the key – D, Em, F♯m, G, A, Bm and C♯° – are built using those notes. On a score, the key signature tells us what key the piece is in via sharp or flat symbols placed at the start of the stave, on the lines corresponding to the relevant notes. These indicate which notes need to be played as sharps or flats throughout the piece in order to stay in key.

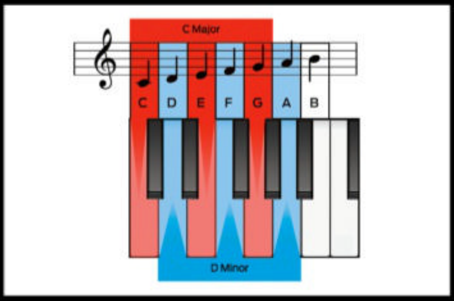


Chords

Chords can be defined as multiple notes played simultaneously. For everyday songwriting duties, the humble triad, or three-note chord, is the order of the day

01 FORMING BASIC TRIADS

The common-or-garden basic chord is known as a triad, which contains three notes. To build one, you start on any note of a scale, then add alternate notes from the scale until you have a stack of three. So to build C major (C-E-G), for example, you start on the root note of C, skip the next note of the scale (D) to land on E, then skip the next note (F) to land on G. Triads can be major or minor depending on the position of the middle note. An interval of a major 3rd between the middle note and the root results in a major triad, while if the interval is a minor 3rd, it's a minor triad. This is why building a triad using notes from the C major scale and starting from D results in a minor chord – Dm (D-F-A) – because the interval between D and F is three semitones, or a minor 3rd.



Basic triads are stacked alternate notes from a scale

02 DIMINISHED RESPONSIBILITY

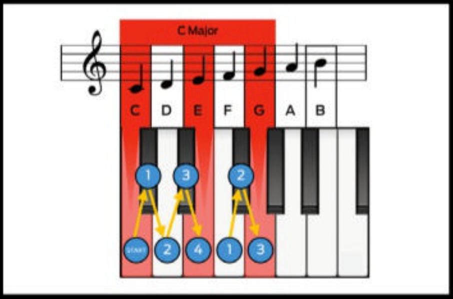
If you take a regular minor triad and lower the 5th by a semitone, you get what's known as a diminished chord. Because the 5th has been lowered, the interval between it and the root note of the chord is referred to as a diminished 5th, and this has another name – the tritone, so called because it's an interval of precisely six semitones, or three whole tones. This interval is considered so unstable and unsettling that it was actively feared in the Middle Ages! Because of this sonic instability, diminished chords sound fairly tense and unnerving in certain contexts, but work really well as passing chords to bridge the gap between a major triad and a minor triad – try B♭ - B° - Cm as an example.

03 AUGMENTED REALITY

In contrast, augmented chords are formed by taking a standard major triad and raising the 5th by a semitone. So to create C+, for example, you'd start with C major (C-E-G) and raise the 5th (G) up one semitone to G♯ to end up with C-E-G♯. This results in three evenly-spaced chord tones, each separated by a major 3rd interval (four semitones). As there are 12 notes in an octave, augmented triads are symmetrical, so any of the three notes in the chord can be the root note. Like their diminished cousins, augmented triads also make great passing chords – try C - C+ - F.

04 THE 4/3 RULE

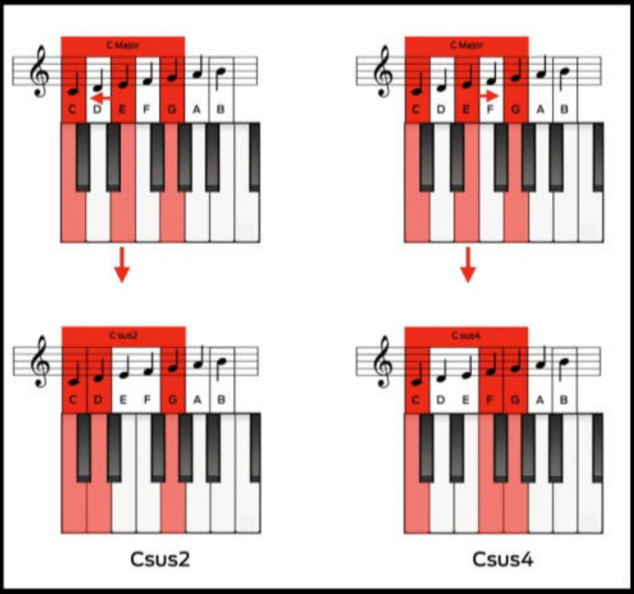
If you don't know the notes in the scale you work with, you can work out how to build major or minor triads on any root note with the 4/3 rule. Find your starting note, count four semitones up the keyboard to find the 3rd, then another three to get to the 5th. So, start on C, four semitones up is E, then three more gets you to G – voila, a C major triad (C-E-G). For minor triads, reverse the formula to 3/4 – three semitones up from the root to the 3rd, then four more to the 5th.



Use the 4/3 rule to find any major and minor triad

05 SUSPENDED ANIMATION

A close relative of major and minor triads, suspended chords are great for movement. They're made by taking the 3rd – the middle note – from a standard triad and moving it up or down by one scale note. Moving it up makes a sus4 chord, with a perfect 4th interval between the middle note and root, while moving it down to a major 2nd interval above the root makes a sus2 chord. So C major (C-E-G) played as Csus4 becomes C-F-G, and played as Csus2 becomes C-D-G.



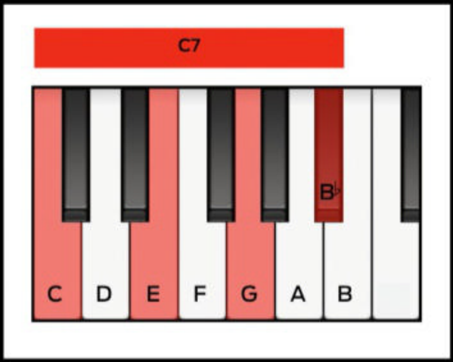
Add a dash of tension to your progression with suspended chords

06 EXTENDED ABILITIES

While it's perfectly acceptable to build a song using basic triads, extending the chords by adding more notes can really help to ramp up the level of sophistication. To build them up, start with a normal triad, but just keep on skipping and stacking notes from the scale. So, in the case of C major, we'd continue from the 5th (G), skip the next note in the C major scale (A) to land on B for CMaj7 (C-E-G-B), then just keep on going, adding a 9th (D) and 11th (F) to give us CMaj11 (C-E-G-B-D-F).

07 LUCKY 13TH

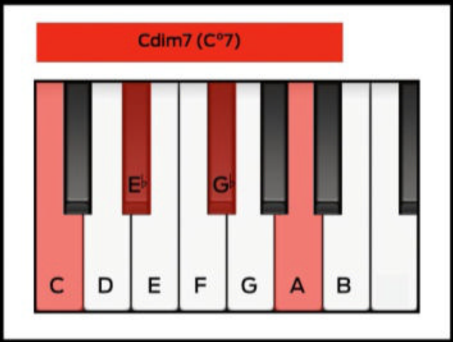
The limit of chord extension is the 13th (any more than this and the note-skipping tactic means you just land on the root again). A quick way of working out the 13th interval above the root is to just play the 6th an octave higher – so in the case of C major, to get Cmaj13 we'd play C-E-G-B-D-F-A. That's quite a wide spread of notes for anyone's fingers, so the chord can be 'voiced' with some of the higher notes shifted down an octave, making it a bit easier to deal with.



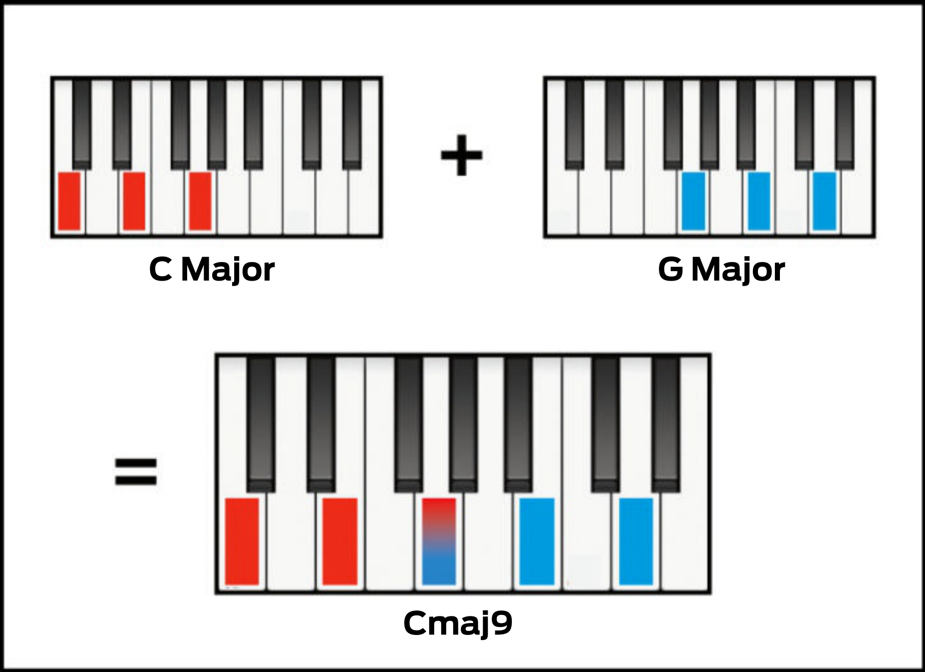
A dominant chord's primary role is to take us back to the tonic chord

08 DOMINANT 7TH

Used extensively in rock, pop, blues and jazz, the function of the dominant 7th chord is to resolve back to the tonic chord. It's built by adding a flattened 7th on top of a major triad – C7, for example, is C-E-G-B♭.



Diminished 7ths are special in that they're symmetrical in structure



Combine simple triads together to make more complex polychords

09 POLYCHORDS

A quick and easy way to form complex chords, polychords are created by combining two regular major or minor triads to make a larger chord. For instance, we can smoosh together a C major triad (C-E-G) and a G major triad (G-B-D) to form Cmaj9 (C-E-G-B-D). Playing the triads in different inversions (or even separate octaves) can yield even more interesting results. Bear this technique in mind when figuring out chords for your track – experiment by squishing triads together in random combinations until you get something that sounds cool.

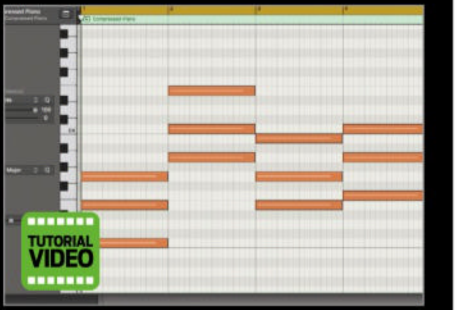
The 5th chord in a diatonic set is called the dominant, which in the key of C major would be G major (G-B-D). Turning this into a dominant 7th by adding an F makes a stronger resolution back to the tonic C major chord.

10 DIMINISHED 7THS

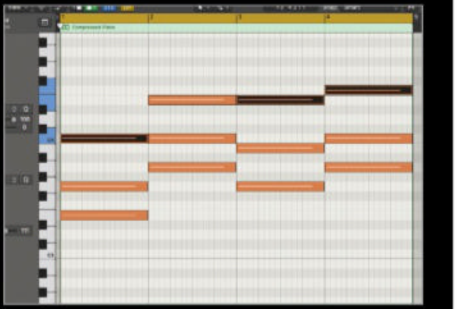
A diminished 7th is created by adding an extra note onto the top of a diminished triad, three semitones up from the 5th. Therefore, C°7 would be played as C-E♭-G♭-A. Interestingly, because diminished 7ths contain four notes that are all separated by equal three-semitone intervals, they span the 12 notes of the octave in a symmetrical pattern. As a result, C°7, E♭°7, G♭°7 and A°7 are all basically the same chord, which are sharing the same notes. The same goes for C♯°7, E°7, G°7 and B♭°7, and also D°7, F°7, A♭°7 and B°7. Diminished 7ths have a function that's similar to that of the dominant 7th, which is basically to resolve back to the tonic.

Chord inversions

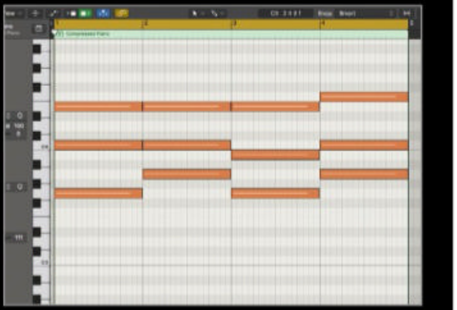
When writing progressions, how do we avoid the jerkiness that often results from playing every chord with its root note at the bottom of the stack? Inversion therapy, that's how!



1 > This four-bar chord progression in C major (C - Am - Em - F), has all the chords played in 'root position' – with the root note as the lowest note. Played this way, the chords jump around the keyboard a fair bit and it sounds quite disjointed, not to mention harder to play as a result.



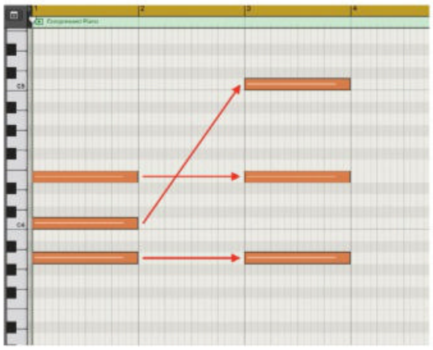
2 > To make a first inversion of a triad, we transpose the bottom note up by one octave. Doing this to the first, third and fourth chords in our piece (C, Em and F) brings them closer in pitch to the second chord of Am, making a smoother progression. Previously C - E - G, the C chord is now voiced E - G - C.



3 > This sounds better, but we can improve things further by turning the C chord into a second inversion. We do this by shifting the 3rd of the chord (the E note) up by an octave as well, making the 5th (G) the lowest note in the chord. There's now minimal movement up and down the keys as the chords change.

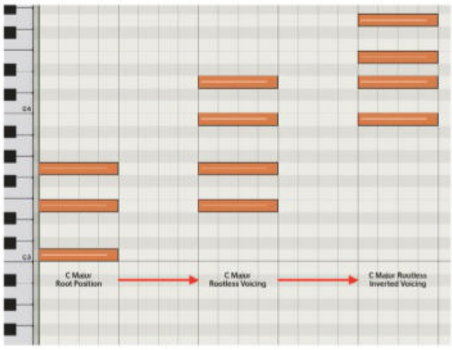
Chord voicings

Voicings are similar to inversions in that they involve adjusting the order in which notes in a chord are played. Rather than just shifting octaves around, however, voicings spread notes across the keys into different octaves, for instance, or sometimes remove a note altogether. As an example, an A minor triad is played normally as A-C-E. If we shift the 3rd (E) up an octave but leave the root and 5th where they are to get A-E-C, this is known as an open voicing rather than an inversion, because the 3rd is now in a different octave than the root.



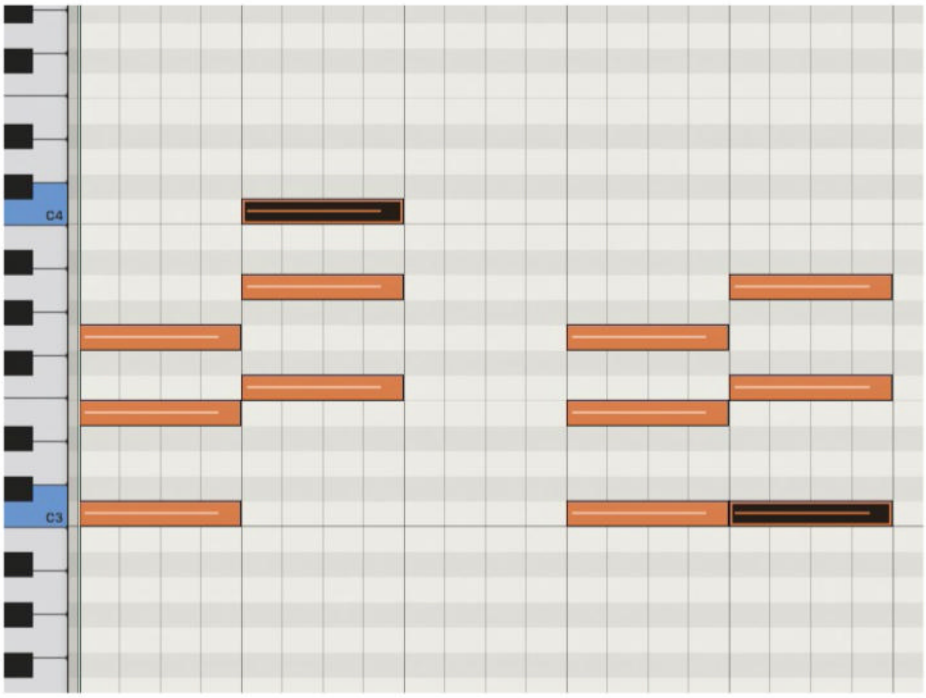
Rootless voicings

Rootless voicings are a way of playing chords without the root note. In band scenarios where the root note is handled by a bass player, they're useful since they can be played with the left hand, leaving the right hand free to improvise. You can create a rootless voicing for a major chord by building a minor 7th chord off the major 3rd. In the case of C major, the major 3rd is E, so you would play Em7 (E-G-B-D). You could then invert this to, say, B-D-E-G for a different vibe. Meanwhile, for minor chords, simply build a major 7th chord off the minor 3rd.



Voice leading

Voice leading is the practise of inverting chords in a progression so that they flow together as seamlessly as possible. The trick is to use inversions to keep notes that are common to both chords in the same position in each chord. If there are no common tones, then use the same inversion of each chord to keep the note movement to a minimum. For example, moving from C major (C-E-G) to F major (F-A-C), with both chords in root position produces a major jump up the keyboard. But by inverting the F chord to a second inversion (C-F-A), the lowest note remains C, with minimal movement in the upper two chord tones.



Good voice leading is the secret to a polished harmonic progression

Finding the key of a song

Whether you use your own innate abilities or a technological aid, being able to determine a song's key is a crucial skill for DJs and producers

01 PLAY ALONG

The simplest way to work out the key of a song is to grab a keyboard and try to play along with the main melody of the song. Chances are the tune will be in one of the major or minor keys, and you should be able to figure out from the notes it uses which key it's in. For instance, if it mainly contains notes from the C major scale and the root note feels like C, the key will be C major.

02 ANALYSE AUDIO

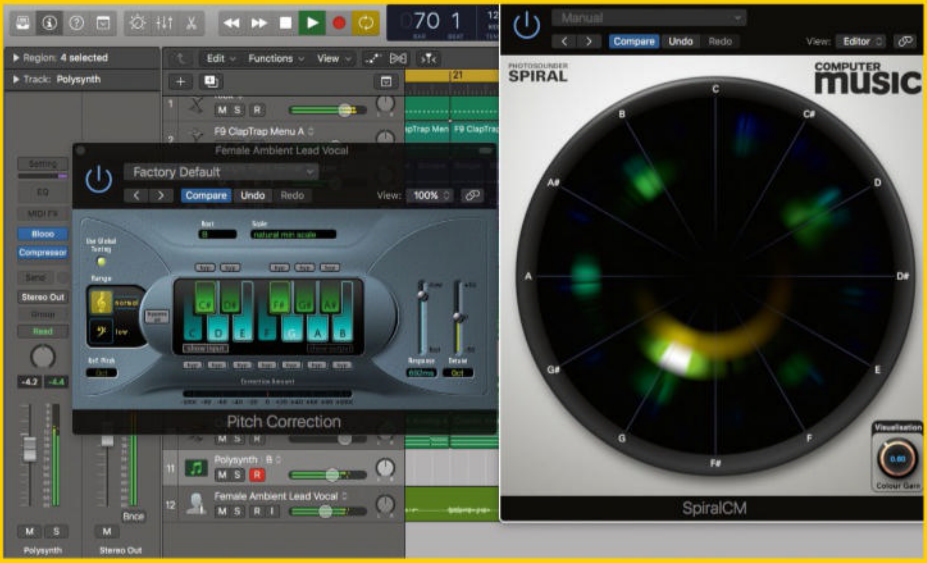
If you have a solo vocal or other audio track, try using a pitch-correction or analysis plugin to work out what notes are occurring in a melody (try Photosounder Spiral CM, available free at filesilo) is great for this. Alternatively, many pitch-correction processors such as Auto-Tune or Melodyne feature a real-time keyboard display of the incoming signal's pitch. Many DAWs have their own versions built in, such as Logic's Pitch Correction plugin.

03 THERE'S AN APP FOR THAT

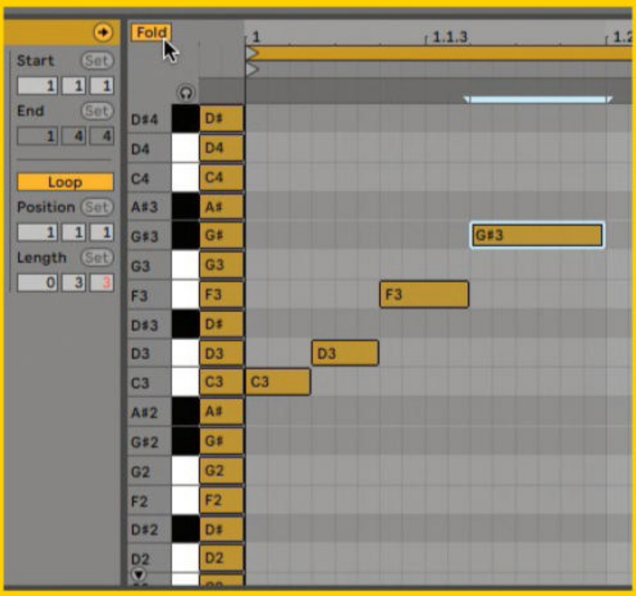
Use Mixed In Key's Key Detect iOS app to determine the key of a song. This clever piece of kit uses your phone to analyse audio in real time, then does some tricky maths based on the frequencies present in the audio to work out the most likely key of the tune you're playing into it.

04 EAR TRAINING

The more you dabble in the black art of music theory, the phenomenon of ear training tends to occur naturally to some extent – you gradually get used to the sound of certain scales, chords and intervals to the point where you might even be able to identify them by ear. If you're looking to speed up the process with some actual exercises to hone your aural pitch-detection skills, there are websites and apps available that are specifically dedicated to ear training. These allow you to regularly test yourself on different intervals and chords. Just type 'Ear Training' into your search engine of choice to browse them.



Pitch analysis tools can be helpful when trying to establish a song's key



Ableton Live's Fold feature keeps you in key when pencilling in melodies

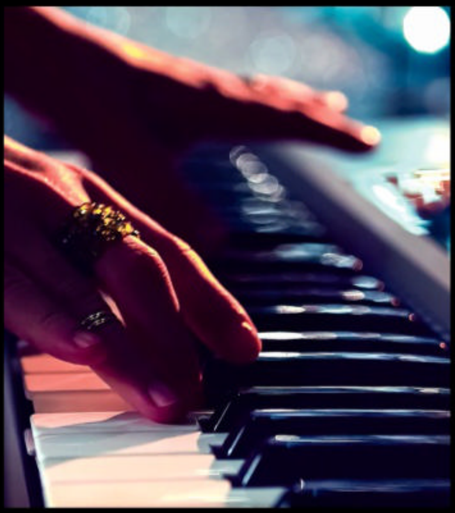
05 KEY MOMENTS

The piano roll editor in many DAWs can be useful if you're having problems keeping in key. Ableton Live has a feature that allows you to show only the notes that currently exist in a part, hiding all the ones that haven't been used yet. If you know the notes in your scale, you can add these in at the start of your clip and drag them back before the first beat. Now you can hide all the other notes and click away, safe in the knowledge that you're only entering notes that work with your key.

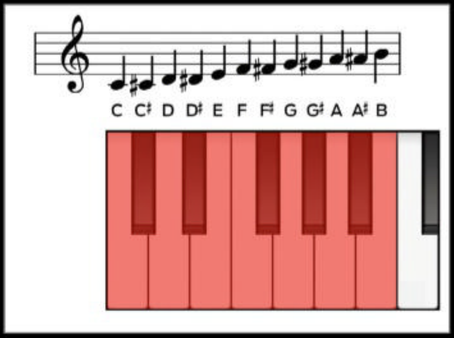
Scales

The basic definition of a scale is a set of musical notes arranged in order. Most people are familiar with the C major scale as being the one where you start at middle C on the piano and just play all the white keys up the keyboard until you've covered the notes C, D, E, F, G, A and B, eventually hitting C again an octave above where you started. This is usually the first scale we learn, but there are different types of scale, each with their own individual sound, some containing different numbers of notes. They sound so different due to the variations in patterns of intervals between notes in each scale. With 12 starting notes to choose from, and numerous patterns for each one, this gives rise to a dizzying number of scales to commit to memory. So why do theory practitioners place so much emphasis on learning them?

Aside from the physical benefits of practising them, the main reason to know a scale or two is that it gives you more of an idea of what notes to actually play over any given chord sequence. If you know you've got a song or track in a particular key, knowing the notes in the parent scale of that key means that you've got much more chance of hitting a note that will work over the chords that make up the tune. This is because most of the time, in popular music, chord progressions are made up of chords that are diatonic to one key or another, and those chords will themselves have been built using the notes from the scale in question. So, for example, if you know your song is in the key of A major, there's a good chance that if you play the notes of the A major scale over the chord progression, you'll get something musically palatable. So knowing your scales gets you off to a solid start when coming up with vocal melodies, lead lines, basslines and solos that actually work.

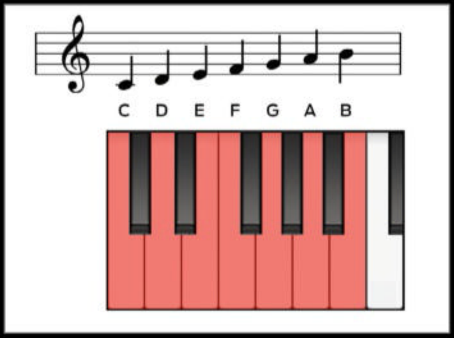


Common types of scale



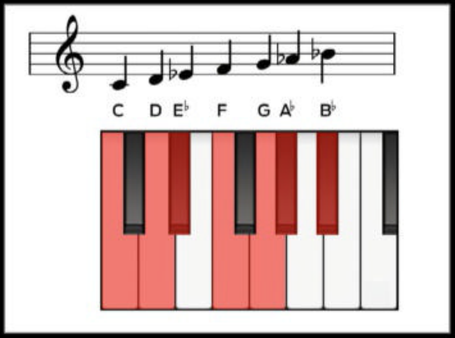
Chromatic

Taking in all 12 notes found within an octave, the chromatic scale isn't generally used a great deal other than as a collection of every note you can possibly play on the keyboard, so it's more useful as a teaching and practice aid rather than a practical scale to be used in your tracks.



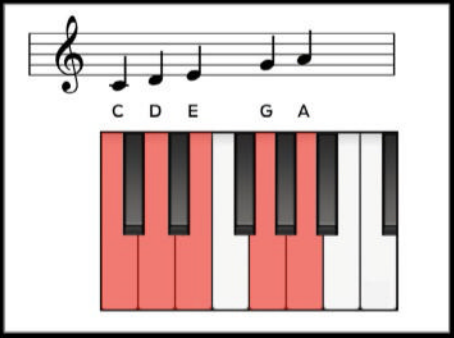
Major

The major scale is usually the first one we learn, chiefly because it has a cheerful, happy demeanour and is one of the easiest scales to memorise and play. If you start on a C and play the seven white keys to the right in sequence, you'll get a C major scale – C D E F G A B.



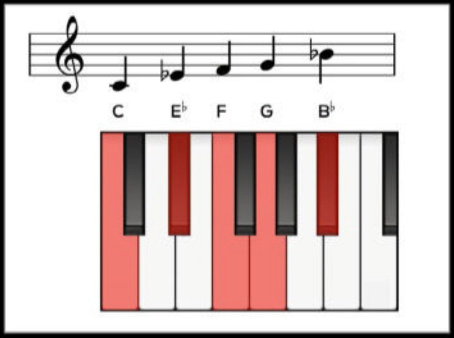
Natural minor

If you play a major scale from the sixth note in the sequence, the interval pattern produces the natural minor scale, which sounds darker and moodier than its major cousin. So with the 6th degree of C major being A, we get A B C D E F G – A natural minor. C natural minor would therefore be C D E♭ F G A♭ B♭.



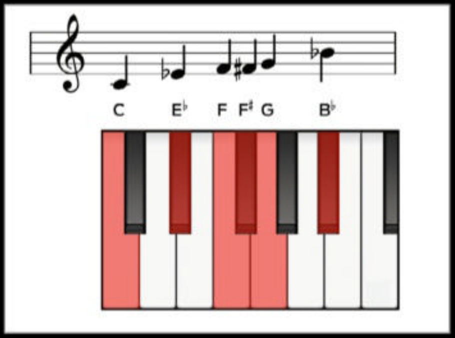
Major pentatonic

While major and minor scales have seven notes, pentatonic scales have only five. Essentially a major scale minus the 4th and 7th – C D E G A – the major pentatonic is a staple of folk, blues, rock and country, as it uses the five notes from a major scale that work over the largest number of underlying chords.



Minor pentatonic

The minor version of the pentatonic scale is formed in a similar way to its major cousin, but by omitting two notes from the natural minor scale. The missing two notes in a minor pentatonic are the second and sixth degrees, so C minor pentatonic would be spelled C E♭ F G B♭.



Blues

Take a minor pentatonic scale and add an extra note – the sharpened 4th degree – to get the blues scale. The C blues scale, therefore, goes C E♭ F F♯ G B♭. Although you can play a standard minor pentatonic over the blues, adding that extra sharpened 4th gives it that essential flavour so characteristic of blues.

Scale name	Intervallic formula
Chromatic	1-1-1-1-1-1-1-1-1-1-1-1
Major	2-2-1-2-2-2-1
Natural Minor	2-1-2-2-1-2-2
Major Pentatonic	2-2-3-2-3
Minor Pentatonic	3-2-2-3-2
Blues	3-2-1-1-3-2

Intervallic formulae is the number of semitones you have to count to build each scale

INTERVALLIC FORMULAE

Keyboard players are at a disadvantage to guitarists when it comes to memorising scales – the latter only have to memorise one shape for a scale, then move that shape up the neck to play it in a different key; whereas on the keyboard, playing the same scale up just one semitone requires having to remember a completely different pattern of keys – play a C major scale, then a C♯ major one, and you'll get the idea.

Rather than spending hours practising them until muscle memory takes over, you can remember simple number sequences – known as intervallic formulae – to help you work them out on the fly, based on counting the number of semitones between each note in the scale.

For example, the formula for a major scale is 2-2-1-2-2-2-1, so to play, say, D major, you'd start on D, move up two semitones to E, then another two to F♯, then one semitone up to G, two more to A and so on, following the formula to complete the scale.

THE SCALE OF YOUR DREAMS

Scoring a dream sequence? Use a whole tone scale! The whole tone scale is a bit special as there are only two possible versions of it, depending on whether you're starting on a white or a black key.

Whole tone scales are hexatonic, which means that they contain six notes, all separated by intervals of a whole tone – hence you get the name. With a formula of 2-2-2-2-2-2, wherever you start from on the keyboard, there are only two possible versions, and they work really well over augmented and dominant 7♭5 chords.

RELATIVE VS PARALLEL

Relative and parallel scales are often mistaken for each other, as they're pretty similar-sounding. So what's the difference?

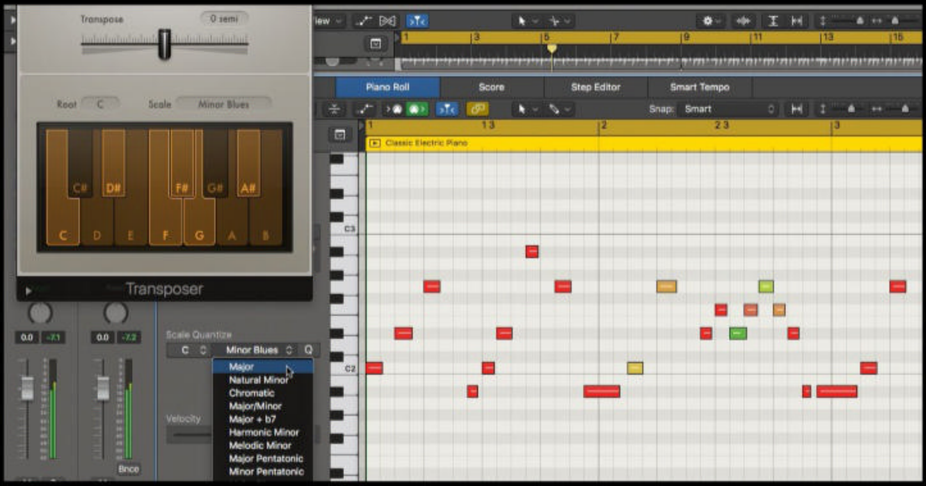
Well, relative scales are two scales – one major, the other minor – that contain the same notes but start on different notes. For example, C major, which contains the notes C D E F G A and B, and A minor which contains A B C D E F and G. Parallel scales, meanwhile, are two scales – one major, one minor – that start on the same note, such as C major and C minor.

SCALE QUANTISING

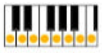
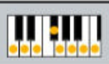
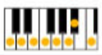
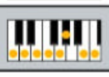
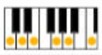
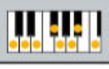
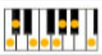
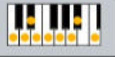
If all this learning makes your head hurt, and you want to 'cheat' a bit, you can use a MIDI transformer like AutoTheory or an iOS app like ThumbJam. Software tools like this only allow you to play the notes from a pre-selected scale of your choosing.

Some DAWs actually have this feature built in already – Logic Pro, for example, contains a scale quantise feature that shifts any wrongly-played notes to the nearest correct note in the chosen scale – handy indeed.

Many hardware controllers also feature similar approaches: NI Maschine, Ableton Push and Novation Circuit, for instance, all feature scale modes that lay out only the notes in the specified key across a grid of illuminated pads. And if you get the key and scale settings right, just flailing around randomly on the keys or pads can produce unexpectedly cool results you wouldn't ordinarily have used, even if you already know your scales anyway!



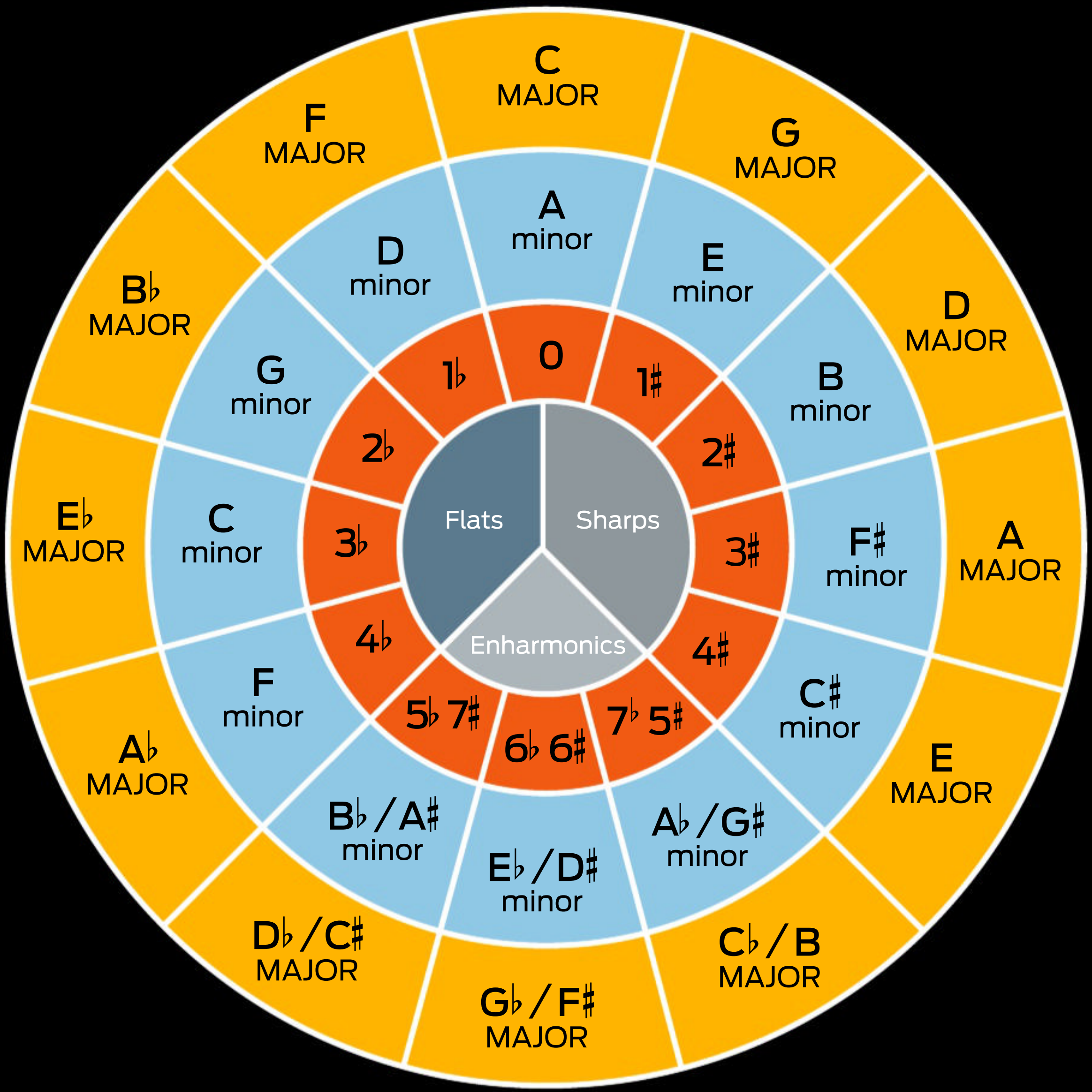
Logic's Transposer locks incoming MIDI notes to a scale, and Scale Quantize corrects already-played parts

Scale name	Intervallic formula	Scale tones
C Major	2-2-1-2-2-2-1	
C Lydian	2-2-2-1-2-2-1	
C Mixolydian	2-2-1-2-2-1-2	
C Harmonic Major	2-2-1-2-1-3-1	
C Major Pentatonic	2-2-3-2-3	
C Lydian Dominant	2-2-2-1-2-1-2	
C Phrygian Dominant	1-3-1-2-1-2-2	
C Bebop Dorian	2-1-1-1-2-2-1-2	

All of these scales contain the notes of a C major triad (C-E-G), so should work over the top

SOLOING TIPS

When improvising over a chord progression, knowledge of scales is handy, as the type of chord you play over governs the scale type you use to select your notes from. The best solos take the chord changes into account – safest choices are the major/minor pentatonics and blues scale, as they contain fewer notes and work over more chords. However, each chord type has a wide selection of scales to choose from that contain the notes of that chord – major chords alone can support at least eight types of scale (see panel), so the more scales you learn, the more you'll know what keys to aim at.


C
MAJOR
G
MAJOR
D
MAJOR
A
MAJOR
E
MAJOR
C♭/B
MAJOR
G♭/F♯
MAJOR
D♭/C♯
MAJOR
A♭
MAJOR
E♭
MAJOR
B♭
MAJOR
F
MAJOR
A
minor
E
minor
B
minor
F♯
minor
C♯
minor
A♭/G♯
minor
E♭/D♯
minor
B♭/A♯
minor
F
minor
C
minor
G
minor
D
minor
0
1♯
2♯
3♯
4♯
7♭ 5♯
6♭ 6♯
5♭ 7♯
4♭
3♭
2♭
1♭
Flats
Sharps
Enharmonics

The circle of fifths

The circle of fifths is a diagram that lays out every musical note, key, three-note chord and scale, and charts the relationship between them. A bit like a musical version of the periodic table, the letters can either represent notes, chords or keys. Go around the circle clockwise and each note or key is separated by an interval of a perfect 5th; go round anti-clockwise and they're ordered in 4ths. But what does the circle of fifths actually do for us? Let's find out...

How to use it...

RELATIVE KEYS

The circle groups together all 12 major keys with their relative minors. A relative key is simply defined as the minor key that uses the same notes as a particular major key, or a major key that uses the same notes as a particular minor key. Major keys are found on the outer (yellow) ring, with their relative minor keys shown in the same segment on the inner (blue) ring.

DIATONIC CHORDS

The circles also group six of the seven diatonic chords found in each key. Centring on the tonic, the other two major chords will be found to the left and right, and the same segments on the inner ring will house the three minor diatonic chords for that key. This works the same for minor keys as well, but with the tonic centred on the inner ring instead.

SHARPS AND FLATS

It tells us how many sharps or flats are in each key, as seen on the central (blue) ring. As you go clockwise from the top, each key adds one more sharp until you get to seven sharps (C♯ major). Going anti-clockwise from the top tells us the number of flats, adding a flat each time until you end up at seven flats (C♭ major).

BORROWED CHORDS

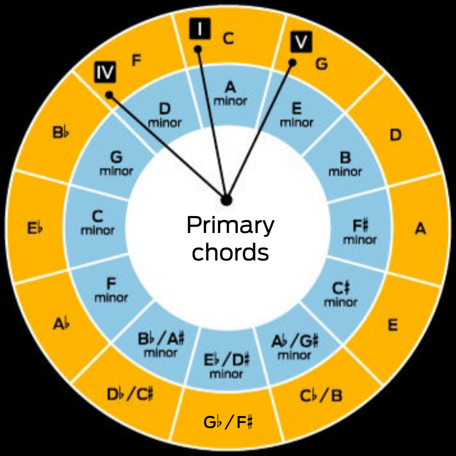
When working with borrowed chords, the circle can show you the diatonic chords for the parallel key to the one you're currently in. Choose your tonic note, then locate its parallel key by finding the same note on the other ring. Now just select a chord to borrow from the palette of five chords that immediately surround it on the circle.

FINDING 3RDS

For a quick way to determine major and minor 3rd intervals (without a keyboard), simply count four steps clockwise from the tonic to find the major 3rd, or three anti-clockwise from the tonic to reach the minor 3rd.

SIMILAR KEYS

The circle tells us the most similar keys. Similar keys are keys whose parent scales differ only by one note – eg, C major (C D E F G A B) and G major (G A B C D E F♯) contain almost all the same notes except for the F, which is F♯ in G major and F natural in C major. Pick a key on the circle, and either adjacent key will only be one note different. Because of this similarity, a lot of music tends to change key by moving between adjacent keys on the circle.



The circle shows you the magic three-chord trick that's built thousands of songs

DISSIMILAR KEYS

It also tells us the least similar keys. Spaced 180 degrees across from each other, you'll find the keys with the fewest notes in common – that is, just two notes. So, the key of C major (C D E F G A B) and its opposite number F♯ major (F♯ G♯ A♯ B C♯ D♯ F) share only the notes F and B. The interval between two directly opposite notes on the circle is always a tritone (six semitones) – handy when figuring out tritone substitutions.

ORDER OF EVENTS

There are several mnemonics (memory aids) you can use to help you remember the order of keys on the circle. For the sharp side (clockwise), there's Charlie Gets Drunk And Eats Beetroot, while for the flat side (anti-clockwise), you could go for Charlie Forgets BEADs.

You can also use mnemonics to remember the order in which sharps and flats are added to a key signature to indicate each successive key. These include Father Charles Goes Down And Ends Battle for the sharps and Battle Ends And Down Goes Charles' Father for the flats.

ENHARMONIC KEYS

When we get to the lower section of the circle, things get interesting key-wise. The keys with five, six and seven sharps (B, F♯, C♯) continue clockwise around the circle, overlapping with those that have five, six and seven flats (D♭, G♭ and B) as they continue from the anti-clockwise direction. So, for instance, F♯ major with its six sharps and G♭ major with its six flats are the same key with two different names. The same goes for their relative minor cousins, D♯ minor and E♭ minor. Known as 'enharmonic' keys, these keys have dual identities according to whether you're dealing with sharps or flats.

PRIMARY CHORDS

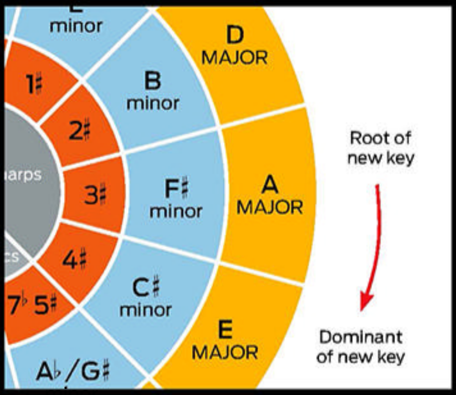
Pick any chord on the circle to be the I chord (or tonic), then the chord to the left will always be the IV chord, and the one to the right will always be the V chord. Known as primary chords, these are the basis for literally thousands of songs, particularly when used in what's known as the I - IV - V progression.

ADDING RELATIVE MINOR

Building on the above, you can expand the I - IV - V progression by squeezing in the relative minor to the tonic, which you'll find on the inner ring of the circle in the same segment as the tonic. For example, I - vi - IV - V in the key of C major would give you C - Am - F - G, or, as another example, in the key of A major, A - F♯m - D - E.

MINORISING CHORDS

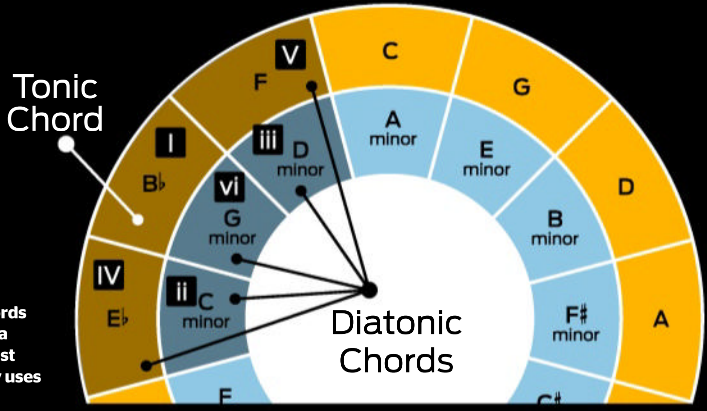
The ii - V - I progression is one of the most widely-used musical phrases there is, especially popular as a jazz turnaround, used to return to the tonic. To find the minor ii chord in any key, just count two notes over clockwise from the tonic and 'minorise' that chord. From there, step anti-clockwise back two steps to hit the V and I chords. For example, a ii - V - I in the key of D would be Em - A - D.



Select a chord as your tonic, and the next chord over will be its dominant

EASY KEY CHANGES

The circle can help with easy key changes that use the dominant 7th of the new key as a method of modulation, placing the dominant 7th before the change to the new tonic chord to prepare the listener. For example, to change key from G major to A major, find the new key's root (A) on the circle, and the next note over clockwise will be its dominant – E, in this case. So the dominant chord you need for the key change is E7: G - E7 - A.



Pinpointing chords to borrow from a parallel key is just one of the many uses for the circle

7 Lead Gtr
Routing
Insert Effects
StudioEQ
Compressor
Send Effects
Automation
Notepad
Channel
Color
System Info
AM S... Kit
Pad
Piano S90
Bass
E Gtr Rhy 1
118.0 BPM
4/4
PRE-DELAY
REVERB TIME
DIFFUSION
LO LEVEL
HI LEVEL
7 Piano S90
Grand S90
MIDI Effects
VOICE
MAIN
OSC 1
OSC 2
NOISE

GO MOBILE!

Mobile music making is big business, with iOS and Android devices easily capable of producing as pro-sounding tunes as desktop computers. Over the following pages we round up the essential mobile apps for all aspects of music production…

> When it first became apparent that music production would be a happy side effect of the smartphone and the mobile tech explosion, both traditional music equipment firms and startup developers were quick to jump on the bandwagon. The promise of both music making by touch and ability to do it on often pocket-sized devices drew us all in. But it wasn't all plain sailing from there, and we didn't all jump ship.

One of the initial problems was compatibility between all of the apps – DAW apps working with synth or instrument apps, for example. Another was that the touch experience didn't always match the promise; it wasn't always as tactile as using a MIDI controller with a laptop, for example. Then of course there was the power… or lack of it. Early mobile phones and tablets just didn't have the oomph to run much of the number crunching required for sophisticated music processing. Early apps were therefore restricted in audio processing, track counts and effect usage.

Happily, many of these initial teething problems have now been overcome. We have standards like Audio Units3 and Inter App Audio – see over for more – where apps effectively run within other apps and you can, if you put your mind to it, almost mirror your desktop studio in your mobile device. And perhaps this ability to imitate your desktop setup is what excites us most. We still don't think that mobile music making offers all the flexibility of a decent, hardware and software hybrid studio based around a powerful computer, but mobile apps, DAWs, instruments and accessories have come on in leaps and bounds to provide a great extension of your studio; a fantastic reason to get out in the fresh air and enjoy this most wondrous of music production pastimes. And these apps and their hosts do allow you to touch those notes in ways that most desktop machines and DAWs still rarely succeed in.

Over the next few pages we'll look at several aspects of iOS and Android music-making and reveal the jewels within them, from synths to drum machines, full DAWs to frankly out-there apps – everything you need to make great music! So come with us and enter a world that might just get you out there too, making grooves on the move.

Key guide

MAIN FORMAT **iPHONE/iPAD/AN**
Some iOS apps are only available on the iPhone or iPad, plus we list the ones (sadly less) available on Google Play/Android.

AUDIO UNITS V3 **AUV3**
Audio Units v3 is the format – rather like desktop Audio Units or VST – which allows compatible iOS plugins to run within iOS DAWs just like (almost) your desktop instrument and synth plugins run in your desktop DAW. AU iOS DAWs include Steinberg's Cubasis (above), WaveMachine Labs Auria Pro, Apple's GarageBand and many more – check our Top 12 DAW roundup for more.

ABLETON LINK **AL**
Ableton Link allows various pieces of hardware and software to stay in time playing together when connected wirelessly. It includes Akai hardware, Reason and Bitwig desktop software and various apps. Launch a melody clip in your desktop Live project and play beats in time with an app, for example.

AUDIO BUS **AB**
Now at v3, Audio Bus allows you to route various compatible apps together within the umbrella AB app so you can route MIDI, for example to trigger different apps and then record that data in your DAW. You can combine apps, chain effects, record performances and sequence anything. The thinking is that you can set entire projects up as an AB project and it's also compatible with Audio Unit apps too. You might also see apps that are Tabletop compatible which is similar, although AB is more popular.

INTER APP AUDIO **IAA**
This was one of the first linking formats used to allow apps in iOS to communicate with one another. It is still supported by various apps but Audio Units v3 has the backing of Apple now so IAA support looks like it's dwindling.

PRESETS & POLYPHONY
NUMBER OF PRESETS AND VOICES
For many of the instruments listed in our top apps we also list the number of preset sounds (either stated or counted by us) found on it and the polyphony of the app ie how many notes can be played at the same time. A monophonic synth can play only one note; a four-voice synth can play four notes and so on. Sometimes a synth might not be based around the idea of having presets in which case we list them as 'N/S' (not stated); similarly the polyphony might also not be obvious or in the specs of an app so will be listed as 'N/S'.

OTHER BIG FEATURES AND PRICE
SEQUENCER, ARPEGGIATOR ETC
Finally, we also list other major features of an app so with a synth, for example, we will list whether it has a sequencer or arpeggiator. You can usually find a detailed breakdown of all the features in an app under the main description in the App Store. App prices might also vary but we've generally listed those found at the App Store at the time of writing.

The 13 greatest mobile synths

The synths are often the stars of any show, especially so a mobile one. Here we have several categories including emulations, oddities and these, the 13 most powerful mobile synths out there. Load 'em up, take 'em out...

01 AUDIOKIT SYNTH ONE £FREE

AUV3 (COMING)/AB/AL/IAA | iPAD/iPHONE | 300+PRESETS, 6-VOICE, SEQUENCER

This synth is, as they say "completely free, fully functional, and ad-free – the ultimate free iPad music instrument app". Synth One was designed as an open source tool for users to take and develop how they please but actually stands up as not only one of the best freebies out there but one of the best synths full stop. It has a character all of its own, a unique and flexible UI and a great overall sound. Of all the apps in our 100, download this one now!

audiokitpro.com

02

BEEP STREET SUNRIZER

$9.99

AUV3/AB | iPAD/iPHONE | 380+PRESETS, 6-20-VOICE, PHRASE SEQUENCER

Virtual analogue synths are becoming as common to mobile music making as they are on your desktop but if you were to ask for just one, this could well be it. It features ‘True SuperSaw sound emulation’ – that’s the kind of fat trance lead capability as made ubiquitous by the Roland JP-8000 and used on dozens (hundreds!) of dance and trance tunes over the years – so you know this synth wears its EDM credentials without any embarrassment. Add in flexible effects, modulation and an arpeggiator, and this could well be seen as the Massive of mobile in years to come.

beepstreet.com

03

ICEGEAR INSTRUMENTS LAPLACE

$7.99

AUV3/ AB/AL/IAA | iPAD/iPHONE 64 | PRESETS, 24-VOICE, ARPEGGIATOR

This is a little different to most other synth offerings here as it uses physical modelling to create sounds which could imitate strings, plucked instruments, metallic sounds and the like. As with classic hardware like Yamaha’s VL1, physical modelling is best explored when you push its parameters into other sonic realms and that is the case here. Indeed IceGear suggest “it is designed not to reproduce real acoustic instruments but to create new synthesizer sounds in different new ways”. And in that sense will offer completely new sonic journeys, so if you want something a little different this could be eight bucks very well spent.

icegear.net

04

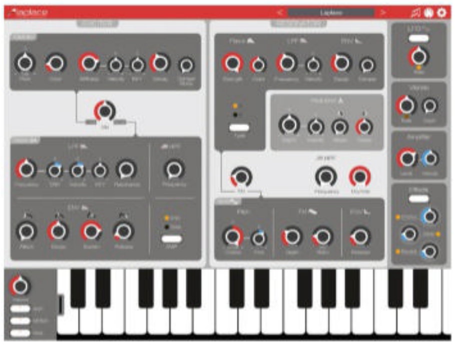
GREEN OAK CRYSTAL

$4.99

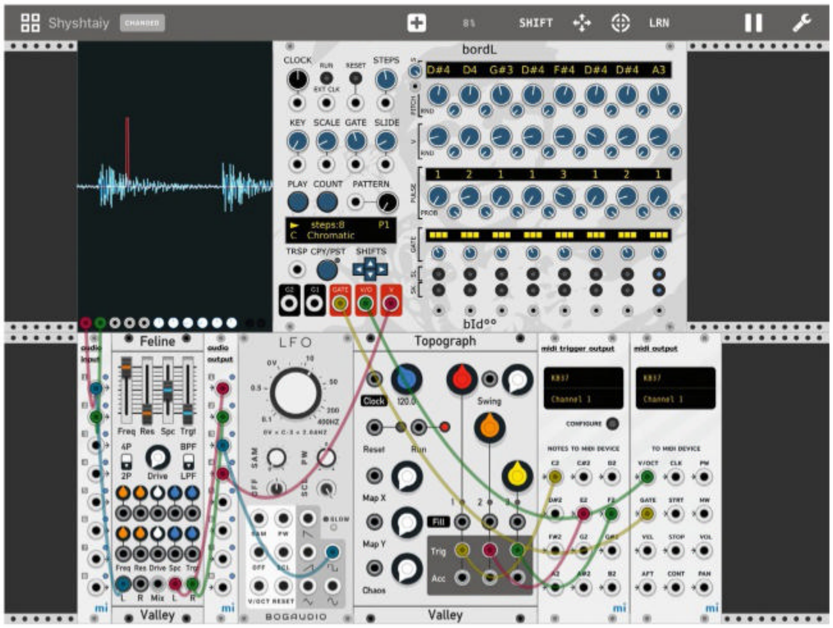
AB/IAA | iPAD | N/S PRESETS, N/S-VOICES, SEQUENCER

The original Crystal synth is one of the legends of the freeware world, an instrument that will not die and has many thousands of users worldwide. It is looking a bit clunky these days (although still sounds great) and thankfully this iOS update not only refreshes the UI but does the original justice in terms of its sound and ease of use. You can get some lovely evolving sounds, dreamy pads and analogue classics and the touch control really does add a new dimension in playing and programming. And at just $499, why not do a favour back to the developer that has given us such a great freebie over the last couple of decades?

greenoak.com



LaPlace is ‘the place’ to be and the synth to use if you want real or imaginary sounds.



A full modular synth experience on your iPhone or iPad.. Who’d have thought…

05

MIRACK

$9.99

AUV3/AL/AB/IAA | iPAD/iPHONE | 500+ MODULES, SEQ AND OTHER MODULES

Thought you wouldn’t be able to get a full mobile modular synth experience? Think again. miRack has 500 modules created by modular experts like Mutable Instruments. It also features multichannel audio and will support interfaces by the likes of Expert Sleepers so will integrate with hardware Eurorack gear.

mifki.com

06

KLEVGRAND ENKL

$5.99

AUV3/IAA,/AB | iPAD | 93 PRESETS, MONOPHONIC, CHIPTUNE-STYLE ARPEGGIATOR

Klevgrand have scored some major successes over the years with a variety of desktop plugins and this maintains their ethos of producing great quality plugins at very attractive prices. It might well be a monophonic synth, but don’t think that it’s in any way ‘just’ intended for bass, as it does a great job of creating huge leads, glitched-up noise, percussive hits and chiptune effects. There’s a flexible oscillator section, EQ and delay and a welcoming interface that makes the synth look and feel a lot simpler and easier to use than it sounds (a good thing!). A proper bargain too…

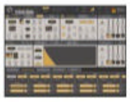
klevgrand.se

07

KV331 AUDIO SYNTHMASTER ONE IOS

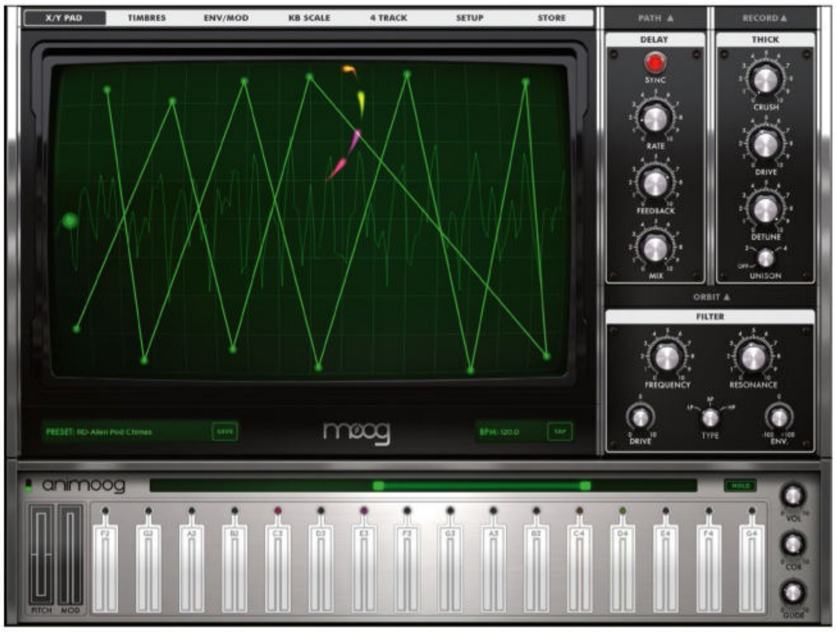
$19.99

AUV3/IAA,/AB/AL | iPAD/iPHONE | i650+PRESETS, 16-VOICE, SEQUENCER



KV331 Audio’s synths are regular end-of-year gear winners and this brings some of their glamour and rich sound to iOS. Featuring a semi-modular architecture, 11 effects and wavetable synthesis, this is about as fully-featured as most desktop synths get. It’s expensive compared to some others but a) there are often deals to be had, b) the iPhone-only version costs a penny, and c) it’s about the richest synth experience you can get. A beaut!

kv331audio.com



Moog do several emulations of the real thing but Animoog does its own thing really well

08 MOOG ANIMOOG £9.99

AUV3/AL | iPAD/iPHONE (£4.99) | 100S OF PRESETS IN FREE PACKS, VARIED POLYPHONY

As opposed to some other Moog mobiles – see the emulation section over the page for more on those – Animoog combines the best of the classic Moog way with new UI sensibilities. It's been around a while but still delivers, thanks largely to its Anisotropic Synth Engine (ASE) that enables you to create sounds with loads of movement and control them all in real time. The iPad version also has several in-app sound options not available in the cut-down iPhone version. Both deliver great quality sound from your device.

moogmusic.com

09 POISON-202 $9.99

AUV3/AB/IAA | iPAD | 592 PRESETS, 24-VOICE, ARPEGGIATOR

We are big fans of Dmitrij 'Jim' Pavlov apps and aren't alone as this is one of the best-rated synths about. Think big leads, huge basses and tearing Prodigy/Chemical Brothers sounds that tear from your speakers. It's easy to get to grips with, with several modes to scroll through and exceptional modulation and big supersaw options. The more recent addition of AU3 support brings this up to date and makes it one of the best synths out there.

jimaudio.pro

10 SUGAR BYTES CYCLOP $24.99

AUV3/AL | iPAD | 595 PRESETS, MONOPHONIC, SEQUENCER

It might only be available for iPad and monophonic but that's not so much a limitation because Cyclop's raison d'etre is bass, and huge bass at that, though it's just as capable of delivering tearing leads and huge evolving stabs. It features 6x2 synth engines and 10x2 filter engines and even a Wobble generator for more dynamic low-end sounds. There are some classic Sugar Bytes effects (Effectrix and Turnado) plus an FX Sequencer and even a Cyclop shooting game. The UI almost feels like a classic piece of Bakelite hardware designed in the 50s and only discovered yesterday. It is ideal for huge dubstep and drum & bass backbones, and while it may be one of the most expensive synths in this top 12, if big, bold bass and dynamic and wobbling sounds are your thing Cyclop is a must.

sugar-bytes.de

11 VIRSYN TERA $11.99

AUV3/AB/AL/IAA | iPAD | 25 MODULES, ARPEGGIATOR

VirSyn produce a lot of different apps and desktop plugins; indeed microTera is also worth a download, but with 25 modules to choose from you can get a lot more flexibility by spending a few more bucks on Tera. It looks a little basic compared to miRack above but that can be a good thing in modular synthesis and creating patches is fun and relatively easy. Lots to play with, plenty of effects and a useful arpeggiator section make this very worthwhile.

virsyn.net

12 WALDORF NAVE $19.99

AUV3/ AB/AL/IAA | iPAD/iPHONE | 500+PRESETS, N/S-VOICE, ARP, RECORDER

Nave has quite a pedigree including synth design maestro Axel Hartmann. It is based around wavetable synthesis with waves from Waldorf's well-regarded Microwave, Wave and Blofeld synths plus a number of its own, and even includes a speech synthesiser "enabling Nave to talk and sing". This and its ability to analyse audio files to create new wavetables give it an edge over other synths here, and while it might be on the pricier side (how dare we say that, when its price pales into comparison with desktop synths!), its rich presets, created by some big industry hitters, demand attention.

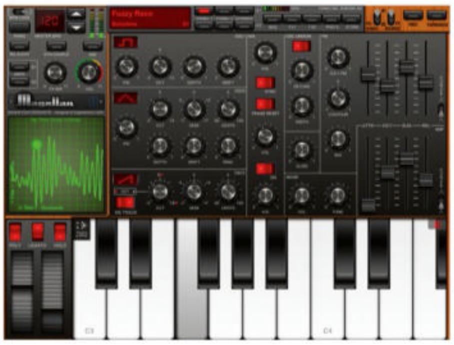
waldorfmusic.com

13 YONAC MAGELLAN SYNTHESIZER 2 $14.99

AUV3/ AB/IAA | iPAD | 300+PRESETS, 20-VOICE, ARPEGGIATOR, SEQUENCER

We were big fans of the original Magellan synth – can it really be 10 years old – and this latest version maintains the great UI and fabulous sound. It combines two synth engines in one to create (if you so wish) one mighty synth with six oscillators, four filters and LFOs. With loads of effects and modulation options it's simply one of the biggest-sounding synths out there.

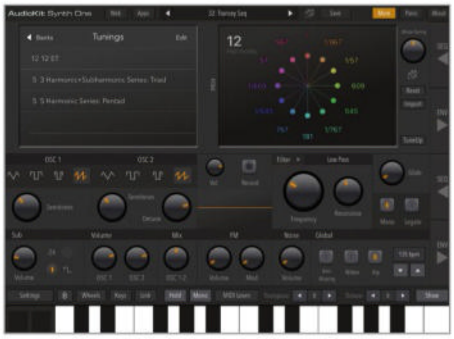
yonac.com



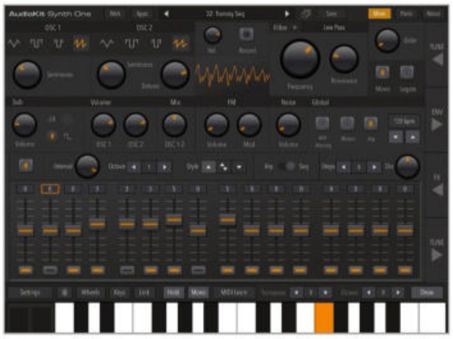
Set sail to musical places afar with Yonac Magellan

> Step by step

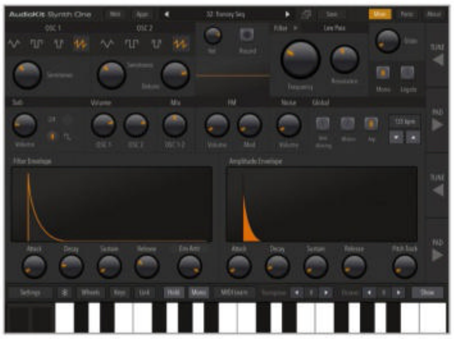
A tour of quite possibly the best synth app… and it's free.



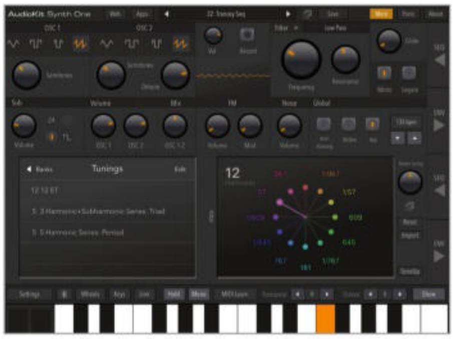
1 > There's no doubting that Audiokit Synth One represents a hell of a lot of synth for your money, especially as that money is zero. It would be a great paid-for synth but the developers are insisting this is a synth for everyone so download it now and we'll give you a tour.



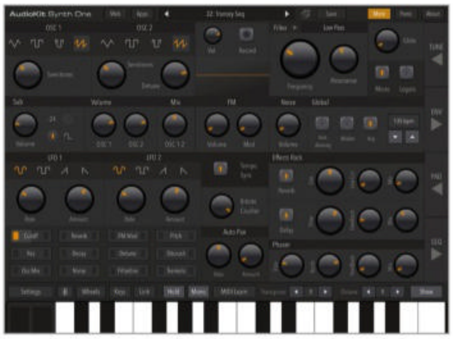
2 > For the top half of the screen for the next few grabs, we're keeping the Main synth screen with oscillators and filters shown from left to right. For the bottom half we've selected the sequencer which can be up to 16 steps, each step highlighted if on and here the faders adjust the pitch of each one.



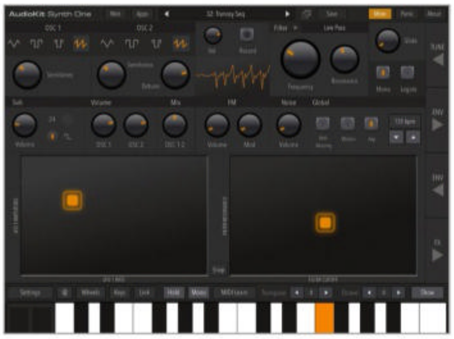
3 > Again, the top half of the screen has the Main synth with oscillators and filters. At the bottom this time, we've now selected the two Filter and Amp Envelope screens which have draggable envelopes and dials under each for more fine adjustments to each.



4 > Now for the bottom half we've selected the Tuning screen which allows you to select from a vast number of tunings from three different banks – we've never seen so many – and all of which can be selected if you have a sequence cycling so you can hear the effect of each. A great way of learning…



5 > Now the bottom half is made up of the Effects and LFO section. The two LFOs can be both (or individually) easily assigned to up to 12 parameters including FM Mod, File Env, Cutoff Freq and effects. It's very easy to use. Likewise, effects on the right are just as easy to control and can be dialled in over four sections.



6 > Finally you get two X-Y pads which can be used to perform by changing four parameters on the fly using your fingers. You can hold the cursor in a certain position using the Snap button and there are also fancy space graphics that seem to tie in with the tempo. Very nice.

Five of the best 'out there' synths

Taika Systems Photophore $4.99

AB/IAA | iPAD | N/S PRESETS, 6-VOICE, ARPEGGIATOR

This 'Flock Synthesiser' uses animal modelling behaviour, as you do, to create sounds. They take the form of 100 oscillators that move through a virtual three-dimensional environment with you controlling sonic properties to shape the results.

taikasystems.com

Yonac RoxSyn $19.99

AU/IAA/AB/AL | iPAD/iPHONE | 500 PRESETS, N/S-VOICE, ARPEGGIATOR

If you fancy plugging a guitar into an iPad and using it as a springboard for metamorphic synthesis – and we did when we got up this morning – look no further. Convert vibrato, slides, bends and dynamics into polyphonic synth sounds via a powerful engine.

yonac.com

iMusicAlbum SynthScaper $14.99

AB/IAA | iPAD/iPHONE | 130 PRESETS, N/S-VOICE

Here's something a little off-the-wall in terms of sound design. SynthScaper creates atmospheric ambience, drones, melodic pads or atonal soundscapes with lots of morphing and hands-on control for stunning results.

motion-soundscape.blogspot.com

BorderLands Granular $19.99

AB/AL | iPAD | N/S PRESETS, N/S-VOICE

With support from artists like Arovane and Cristian Vogel, this is one of the best experimental music apps out there. It includes gestural interaction and, get this, the ability to 'sculpt sound with gravity'. "I'm just sculpting sound with gravity dear." "OK Hun, you carry on…"

borderlands-granular.com

BitShape TC-11 $29.99

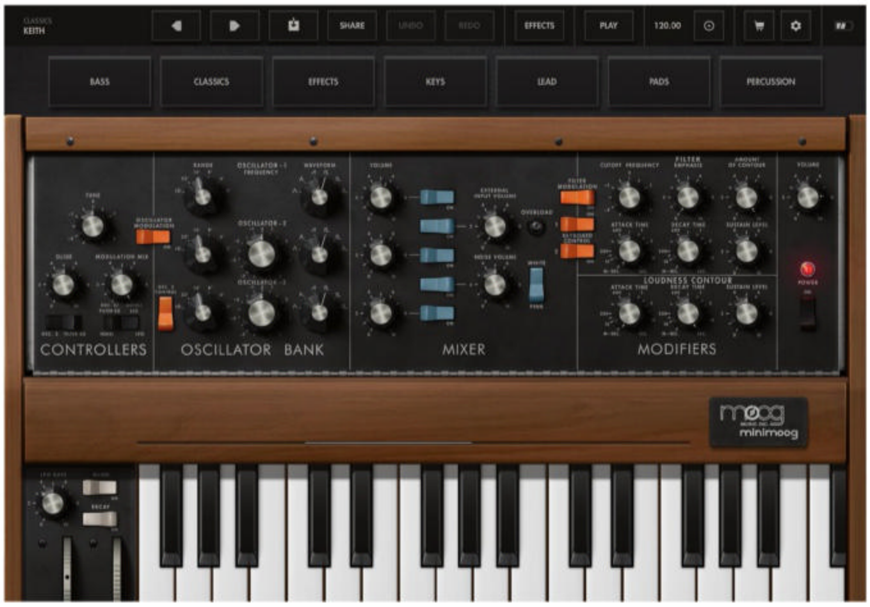
AB | iPAD/iPHONE, 160 PRESETS, 8-VOICE

This is a programmable modular synth with multi-touch and iPad Device motion control. Plenty of presets demo a diverse set of sounds: from pads and synth through huge basses and bells, but really experimentation is key with a huge number of parameters to shape.

bitshapesoftware.com

The 11 best (mostly) synth emulation apps

The emulation of classic synths might be dominated by some key developers, but these companies have brilliantly brought back the vintage sounds of yesteryear so you can experience some amazing keyboard history...



It's a synth hardware classic, now developed by the original company as an app

01 MINIMOOG MODEL D $7.99

AU3/AB/IAA/AL | iPAD/iPHONE | 160+PRESETS, 4-VOICE, ARPEGGIATOR

One of the very first hardware synths of all time, the 1970 Moog Minimoog Model D, gets a fantastic emulation by the very company that made it in the first place. The wonders of tech add presets, polyphony, the ability to run it in any iOS DAWs (thanks to AU3 support, which the more expensive Arturia version lacks) and effects, plus you can add more presets via IAPs. A classic synth and future classic iOS app.

moogmusic.com

02 ARTURIA IPROPHET £9.99

IAA/AB | iPAD/iPHONE | 380+PRESETS, N/S-VOICE

Arturia's i-emulations have been out for a while but still do a great job of bringing back some classic sounds. Alongside the Minimoog and ARP Odyssey, the Prophet V is probably the other must-have – but hugely pricey – synth of days gone by. iProphet includes modern flourishes like a vector screen for mixing parameters, effects and a flexible and detailed modulation matrix area. It could do with AU3 support in the next update but at less than a tenner for some incredible vintage Prophet sounds, it's well worth a punt.

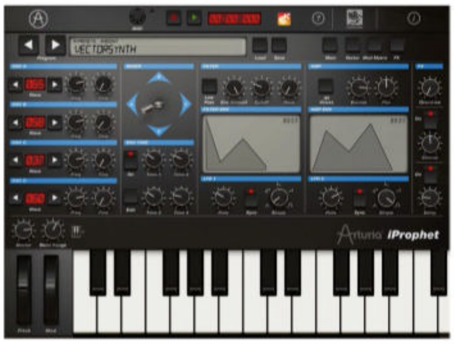
arturia.com

03 ARTURIA iSEM £9.99

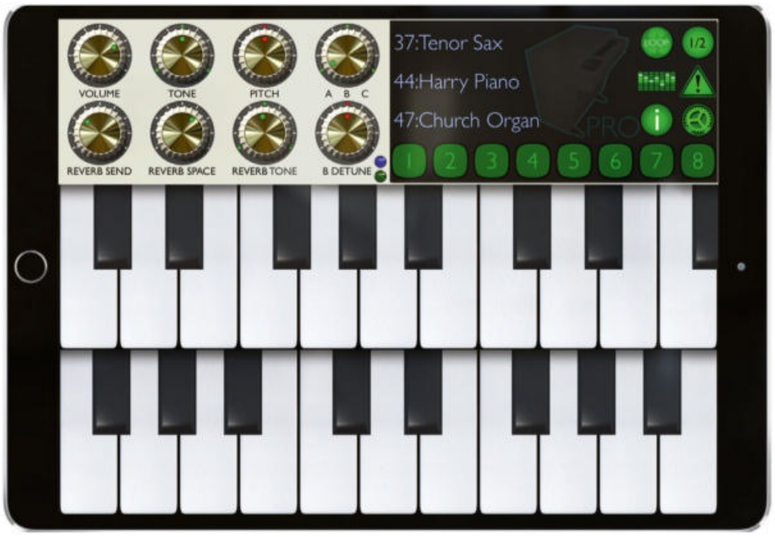
AU/IAA/AB | iPAD | 500+PRESETS, 4- OR 8-VOICE, ARPEGGIATOR

Arturia's second i-emulation in this roundup is of the classic Oberheim SEM, a much-loved 1974 synth as used by Jan Hammer, 808 State, Vince Clarke and Depeche Mode. iSEm is notable among all of Arturia's iOS apps as being AU3-compatible so scores much higher than the rest on the Apple Store, reviews-wise. But that's not its only plus point. It sounds magnificent, has loads of modern twists including effects and chord modes, and is one of the best emulations that you'll find on the iPad, simple as that.

arturia.com



iProphet is one of Arturia's greatest synth emulations but could do with an update for more compatibility



A Mellotron on your iPad can bring all that 60s psychedelia flooding back to your touch device

04

OMENIE MELLOTRONICS STREETLYTRON PRO $14.99

AB/IAA | iPAD/iPHONE | 90 TAPES, POLYPHONEY NOT STATED

OK, it's not a synth but the Mellotron is still a legendary keyboard and this is "the most authentic Mellotronics experience". It was developed with Streetly Electronics, the inventors of the original, and 65 of its 90 'tapes' (presets if you like) come from the original machine.

omenie.com

05

APESOFT iVCS3 $14.99

AUV3/ IAA | iPAD/iPHONE | N/S PRESETS, N/S POLYPHONY

iVCS3 is described as "the official EMS VCS3 emulator", the original synth being a 1969 legend featuring a Battleship-style patch matrix with plug 'n' route pins. It was used by luminaries like Brian Eno (in Roxy Music), Pete Townshend, Pink Floyd and Delia Derbyshire (not to mention being present and correct in our studio at college). This is a completely faithful recreation with three oscs (including an LFO), a noise generator, ring mod, and switchable low-pass filter. There's little in the way of modern additions although the iOS feel adds zoom and ease of use. Authentically analogue.

apesoft.it

06

KORG ODYSSEi $29.99

AB/IAA | iPAD/iPHONE | 100 PRESETS, 2-VOICE

We could pretty much fill these two pages with Korg (or Arturia) apps if we wished but we're limiting their number, just so we can include others (although that's not to say the ones we don't include are not worthy). Odyssei is, of course, a faithful recreation of the original screaming ARP Odyssey synth as made famous by the likes of Ultravox's Billy Currie, and also recreated by Korg in just about every shape and size in hardware. It's expensive for an app but just try getting hold of the *original* hardware. You also get effects and optional sounds to buy as IAPs. Get this app and Moog's MiniMoog and you have two of the greatest synthesisers of all time within touching distance.

korg.com

07

KORG iMS20 $29.99

AB/IAA | iPAD | N/S PRESETS, MONOPHONIC, DRUM MACHINE, SEQUENCER

We'll return to their analogue synths with our next Korg choice, although this features a six-part drum machine, mixer, step sequencer, effects and even Korg KAOSS pad features thrown in. And while you're at it, you can use the patch bay to learn a bit of modular synthesis too! And why not? Which takes away the real message here that iMS20 sounds incredible and utilises Korg's Component Modeling Technology to the max in order to recreate the sound of the 1978 original in impeccable detail.

korg.com

08

KORG iMONOPOLY $29.99

IAA,/AB | iPAD/iPHONE | 128 PRESETS, 4/8/32-VOICE, KAOSS PADS

You know the Korg score by now. It's a recreation of an analogue classic – the last before we go digital (see below) – with all the features of the original plus some modern twists, in this case two multi-effects units, eight virtual patches and a KAOSS pad additions. This has a very fat sound thanks to its polyphony choices (massive and thick mono being an option) and some very comprehensive modulation possibilities make it one of the most flexible in Korg's – actually anybody's – synth arsenal. A cracker.

korg.com

09

KORG iWAVESTATION $29.99

IAA,/AB | iPAD/iPHONE | 1000+ PRESETS, 32-VOICE, RANDOM SEQUENCE ENGINE

If you want a slice of 90s nostalgia updated, you could go for Korg's marvellous iM1 recreation of the classic hardware synth *[actually released in 1988 – pedant Ed]*, but this has just that bit more power and flexibility for that full-on decades-old experience. By now you'll realise you have to pay big-ish bucks for a Korg revival, but within the remodelled-for-touch-UI – including a new wave sequence view – you get an amazing 1000-odd sounds (1500 including the $4.99 IAP), 55 effects and a stunning amount of polyphony. Some say those 90s workstations did too much and filled up your mixes in an instant. Those people were absolutely right, although you'll still fall (back) in love with them.

korg.com

10

MOOG MODEL 15 $29.99

AUV3/AL/AB/IAA | iPAD/iPHONE | 160 PRESETS, 4-VOICE POLYPHONY

Model 15 not only recreates the legendary modular synth on an iPhone and iPad – complete with modules including the Moog 921-series oscillators, 904A Low Pass Filter and 907 Fixed Filter Bank – but also adds features like MIDI integration, external control and loop recording. As well as being an educational tool – you'll learn a lot just by loading in presets – the patching system is well implemented, and of course it sounds amazing. Goodness knows what an original Moog Modular will set you back but even the relatively high (for an app) $30 is a bargain, not to mention the saving in weight. A must-have for modular heads.

moogmusic.com

11

SYNCLAVIER GO! $19.99

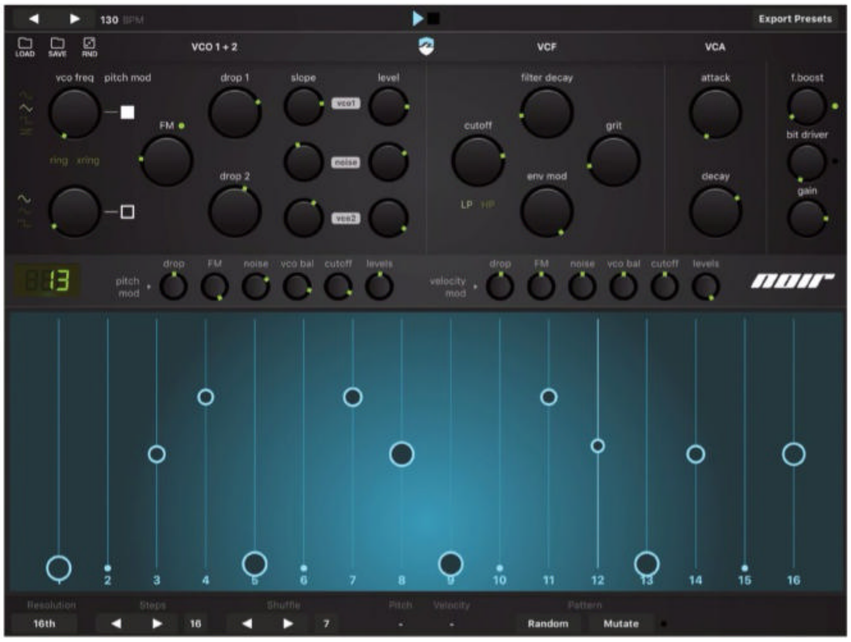
AUV3/AL/AB/IAA | iPAD/iPHONE | 979 PRESETS, , MULTITIMBRAL (NOT IPHONE)

The original early-80s Synclavier was an FM/Additive synth with sampling capabilities that took the studio and music worlds by storm. Not only was its sound very much the stuff of genre-moulding but its price was almost as mythical, reaching well into six figures. Desktop users have been able to enjoy a recreation by Arturia for a while but this iOS version – developed with a DSP engine "re-engineered from the original hardware" – retains many of the classic features with added iOS usability. There are loads of on-board presets and you even get 16-part multitimbral playback on an iPad for full-on 80s tracks.

synclavier.com

10 of the best beat-making apps

We're talking 'drums only' with this list of creative beat-making apps that allow you to create patterns, automate and generally provide a great backbone for whatever tunes you produce...


130 BPM
Export Presets
LOAD
SAVE
RND
VCO 1 + 2
VCF
VCA
vco freq
pitch mod
drop 1
slope
level
filter decay
attack
f.boost
FM
cutoff
grit
bit driver
drop 2
env mod
decay
gain
vco1
noise
vco2
LP
HP
pitch mod
velocity mod
drop
FM
noise
vco bal
cutoff
levels
noir
Resolution
16th
Steps
16
Shuffle
7
Pitch
Velocity
Pattern
Random
Mutate

01 RUISMAKER NOIR $7.99

AUV3 | iPAD/iPHONE | MONO, N/S PRESETS

Described as a 'Relentless Rhythm Synth', Noir creates beats and loops from scratch and is packed with drum synthesis options – indeed, such is its flexibility it almost veers into bass-sounding territory at times and we nearly put it in our Groovebox category (see later). The layout will be familiar to any synth user with oscs, filters and amp sections but it's all about sequencing, morphing and fluid sounds with superb implementation.

ruismaker.com

02 6X806 NOISE DRUM SEQUENCER $2.99

AL/IAA/AB | iPAD/iPHONE | N/S SOUNDS/KITS, MULTIPLE EXPORT OPTIONS

This six-track drum synthesiser and sequencer is ideal for "creating beats, electro rhythms or wacky synth blips". The interface is a little unclear at first, but once you get your head around the creation of the core beats, you can quickly assemble some quite striking and unusual loops. With the added benefit of effects, filtering and randomising this is very much one for getting extreme beats down quickly.

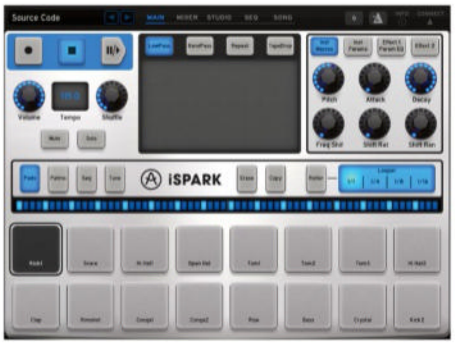
apps.apple.com

03 ARTURIA ISPARK $19.99

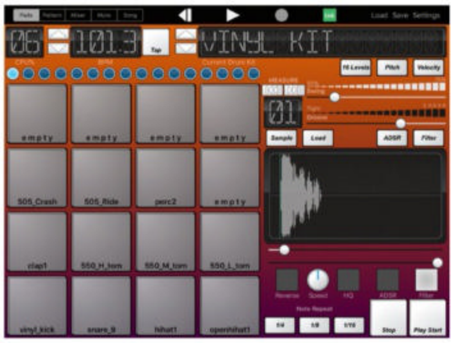
AL/IAA/AB | iPAD/iPHONE | 640 INSTRUMENTS, 40 PRESETS, 32 PATTERNS PER PRESET

The bigger music technology developers have some long-standing drum machines out there that are beginning to look a little long in the tooth (and have suffered review-wise), but Arturia's iSpark is still garnering favourable comments. That might be to do with its ease-of-use and specs that include a ton of sounds, patterns and kits. Straight-up, this is very easy to use and there's enough connectivity to get a range of electronic and acoustic beats into your iOS tunes.

arturia.com


Source Code
iSPARK

Will Arturia's drum machine iSpark your rhythmic creativity? (Groan)



04 BEAT MACHINE $FREE

AL/IAA/AB | iPAD/iPHONE | 10 KITS, 11 PATTERNS

There aren't too many freebies included in our app tour this time around and this is one of the better ones, following the standard XOX sequencer and style for creating classic dance beats. You also get MPC-style pads and parameter editing, including Pitch Drive, ADSR and filter. The screens are a little basic but it's very easy to use – in terms of creating patterns and kits and saving them – and pretty flexible in its sound.

apps.apple.com

05 ELLIOTT GARAGE EGDR909 $2.99

AUV3/AL/IAA/AB | iPAD/iPHONE/AN | 8 TUNABLE SOUNDS, MULTIPLE EXPORT OPTIONS

It's pretty obvious what machine this is emulating right from the UI, even if you haven't yet spotted the '909' numbers at the end of the name yet. Yes, it's the ubiquitous Roland inclusion that just about every drum machine round up – be that hardware or software – must include. 909 beats have been the cornerstone of many a dance genre and this one delivers them with a 16- step sequencer and 48 programmable rhythm patterns. It is only *slightly* hampered by small controls as it follows the original so closely. Still, for the price and AUv3 support it's still a bit of a bargain. You can also buy an 808 version.

elliottgarage.com

06 FINGERLAB DM1 – THE DRUM MACHINE $4.99

AL/IAA/AB | iPAD/iPHONE | 108 KITS, MULTIPLE EXPORT OPTIONS

On the face of it, this is a straightforward drum machine with nine pads and over 100 kits, but it comes with enough effects (including Overdrive, Delay, Reverb and Dalek filter) plus a duo of FX trackpads to "distort, modulate and transform your beats" and with automation, it allows some pretty crazy beats. Pretty good price too, although there are some IAPs in there.

fingerlab.net

07 MOMINSTRUMENTS ELASTIC DRUMS $19.99

AL/IAA/AB | iPAD/iPHONE | 6 CHANNELS, 13 SOUNDS, MULTIPLE EXPORT OPTIONS

Described as the ultimate groovebox, we've not included it in that category as it only features drum sounds, but it's what you can do with them that counts, when all is said and done. You get six drum synth channels with 13 different percussion engines (including kick, snare, hi-hat, drone and sampler) so you could wrestle some non-drum sounds out of it, but really this is all about the beats and being totally dynamic with them. A 16-step sequencer allows you to record the channels and there are 12 parameters per channel to adjust, automation for eight effects plus performance stutter type effects. Elastic, indeed.

mominstruments.com

08 OLYMPIA NOISE PATTERNING $19.99

AL/IAA/AB | iPAD/iPHONE | 63 KITS, EXPORT TO ABLETON LIVE OR AUDIO

Patterning 2 has what you might consider a unique circular method of creating beats, that is both intuitive and creative in that looped beats can be easily created with velocity changes for a human feel or automation for a more out-there feel. There are effects and filtering parameters to add per sound and certainly enough linkage both internally and externally to fuse your beats with other creations. It's one of the fastest – and indeed most satisfying – ways for musicians to create beats on an iPad and iPhone. It's available for free (with IAPs).

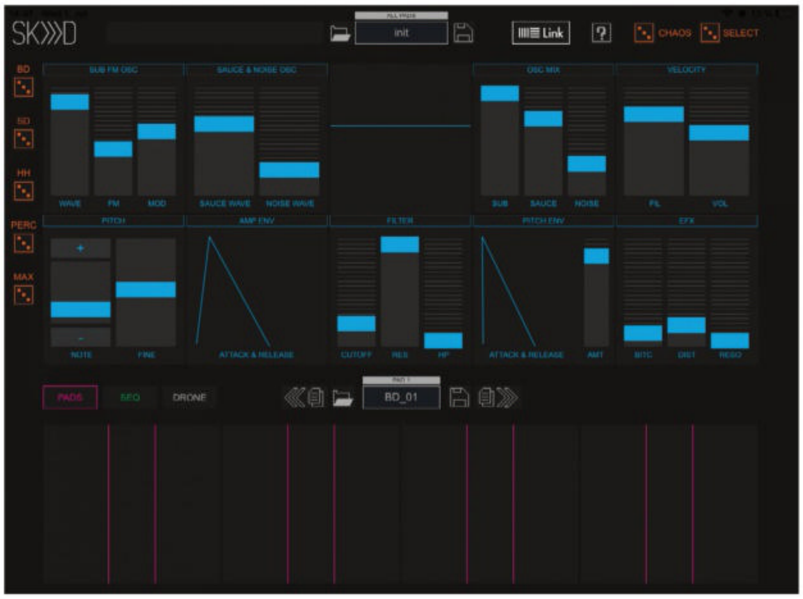
olympianoiseco.com

10 SONOSAURUS DRUMJAM $7.99

AL/IAA/AB | iPAD/iPHONE | DOZENS OF LOOPS, 20 PATTERNS, MULTIPLE EXPORT OPTIONS

You can expect most drum apps to really make the most of the iOS touch interface and that's certainly the case with DrumJam. A central area allows you to drag loops together and easily move them around the screen to adjust pan and volume levels. Meanwhile a pad/keyboard allows you to play along or record your own beats with a selection of performance effects. You can also add effects (including low-pass filter, pitch bend, delay, reverb, lo-fi, and distortion), and many of the loops were recorded by Pete Lockett (who has played with Peter Gabriel, Bjork and Robert Plant). Inspiring stuff all-round.

drumjamapp.com



09 SKIIID $5.99

AUV3/AL/AB/IAA | iPAD/iPHONE | 500+MODULES, SEQ AND OTHER MODULES

One of the newest drum machines here, Skiid features AUv3 compatibility and an attractive UI that gets you creating deliberately scrunched-up beats. The emphasis is on both morphing between a set of kicks, snares, hi-hats and percussion (each with four slots) and dirtying them up with noise, a bitcrusher, distortion and resonator. It really is "dirty and alive".

all-the-machines.com (pretty sparse so far)

Four of the best piano apps (and teachers)

False Piano £FREE

iPHONE/iPAD | IAA

A couple of piano sounds, created by FM synthesis, are all you get here but FP does them well, and you can adjust the keyboard size. Plus, said keyboard can be displayed as double rows.

apps.apple.com

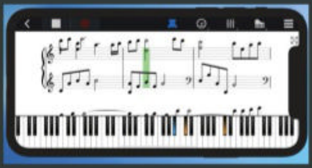
Electric Vintage

Apesoft Electric Vintage $8.99

iPHONE/iPAD | IAA/AB/AUv3/AL

The quality is high here, with effects like tremolo, chorus/flanger, wah-wah and reverb, so the sonic capabilities are that much wider and more authentic for an electric piano.

apesoft.it

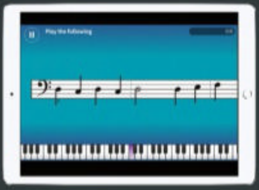


Perfect Piano - Learn to Play $2.99/month

iPHONE/iPAD/AN

If you fancy doubling your piano app up as a learning tool, this is one of the highest-rated out there, with lots of sounds, scores, piano multiplay with other players and online chat.

revontuletsoft.com



Simply Piano $10-20/month

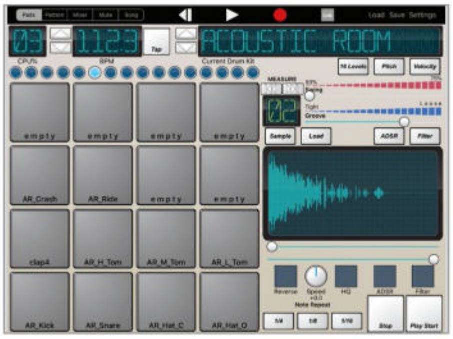
iPHONE/iPad/AN

And finishing with one solely for learning, Simply Plano runs in your iOS or Android device placed on an actual keyboard which you play. The app then 'listens' to what you are playing and gives you feedback so you can learn and improve. It can be quite an expensive subscription so probably only one if you are serious, but among the best learning tools out there.

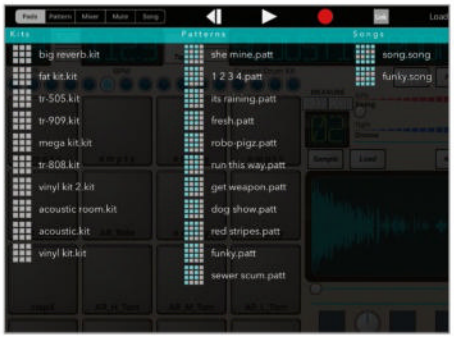
joytunes.com

> Step by step

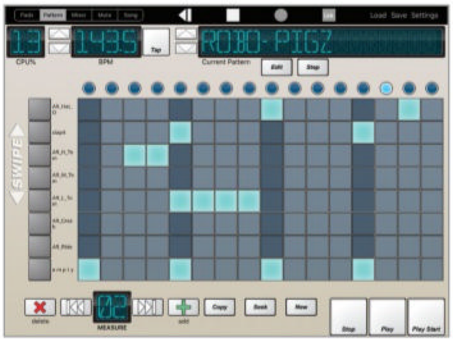
2. Getting your kicks for free with Beat Machine


ACOUSTIC ROOM

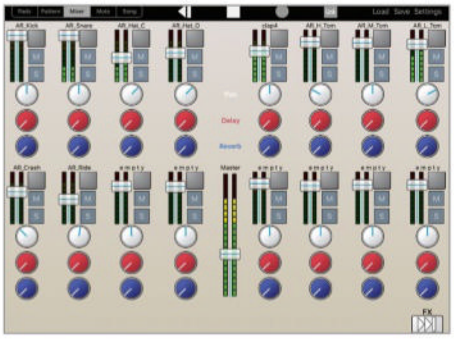
1 > Download Beat Machine for free now and we'll give you a tour of this flexible beat maker. You can cycle through the options using the top five tabs. Here is the Pads screen complete with sounds loaded on the first 10 pads (of the 16 available) using the sounds from the Acoustic Room Kit.


Kits
Patterns
Songs
big reverb.kit
fat kit.kit
tr-505.kit
tr-909.kit
mega kit.kit
tr-808.kit
vinyl kit 2.kit
acoustic room.kit
acoustic.kit
vinyl kit.kit
she mine.patt
1 2 3 4.patt
its raining.patt
fresh.patt
robo-pigz.patt
run this way.patt
get weapon.patt
dog show.patt
red stripes.patt
funky.patt
sewer scum.patt
song.song
funky.song

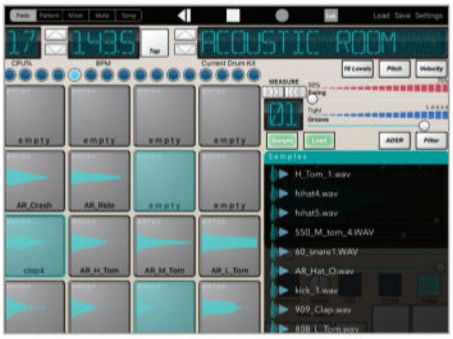
2 > If you want to change the currently loaded Kit or Pattern for one of the extra ones (10 and 11 respectively) supplied, simply hit the Load option and you will get this screen: kits down the left and Patterns in the middle together with complete Song options.


ROBO-PIGZ
SWIPE

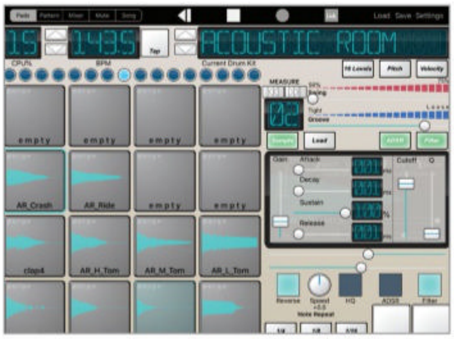
3 > The Pattern tab is for sequencing and allows you to place individual sounds, or a run of the same one per channel, very easily indeed. You can use the swipe strip on the far left to move up and down across the 16 sounds if you have a lot loaded in.



4 > The Mixer tab allows you to adjust the levels of all 16 pad sounds, and there are options to mute, pan and solo each one, plus add useful delay and reverb effects. It looks a little basic but remember this is a free app!


ACOUSTIC ROOM
Samples
H_Tom_1.wav
hihat4.wav
hihat5.wav
550_M_tom_4.WAV
60_snare1.WAV
AR_Hat_O.wav
kick_1.wav
909_Clap.wav
808_L_Tom.wav

5 > Over on the right of the screen you have options to change the Envelope (ADSR) and Filter (Frequency and Q) parameters, plus a drop-down menu allows you to change the sample on each pad so you can create your own kits, and very easy it is to do too.


ACOUSTIC ROOM

6 > Finally you can edit individual beats by highlighting the ones you want to change and then hitting some of the options to the right. There's a Filter and a Reverse button that allow you to drastically change each hit, for example.

Three guitar effects

IK MULTIMEDIA AMPLITUBE iOS/UA (FOR ANDROID REQ. IRIG) $27.99

IAA/AB | iPAD/iPHONE/AN | 17 PEDALS, 18 AMPS AND CABS PLUS IAPS

Amplitube lets you assemble your own guitar rig via six stompbox effects plus an amp and a speaker cabinet with up to two mics. You get 17 stompboxes, eight amps, ten cabs and two mics. There is a free version which scores less reviews-wise than this. Either way it can really sound great and is sonically very flexible.

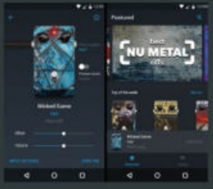
ikmultimedia.com

POSITIVE GRID BIAS FX 2 $FREE TO $99

IAA | iPAD/iPHONE | 77 FACTORY PRESETS, AMPS AND PEDALS

This includes a range of vintage pedal emulations and high-end rack effects that you can combine for custom sounds of all types. You get four amps and eight effects pedals free and there are plenty more available as IAPs (up to $99). This is one of the best ways to turn your amp into an effects box.

positivegrid.com



ULTIMATE GUITAR TONEBRIDGE $FREE

IAA | iPAD/iPHONE/AN | 1000+ PRESETS/SONGS

Here's a great idea in a fully-formed app that should have you learning a whole lot while you go as well. Ultimate Guitar's Tonebridge features 1000+ presets with different tones used on famous songs. Just plug your guitar in, select a song and a pedal effect appears which you can demo or play along with via tab at the Ultimate Guitar website.

ultimate-guitar.com

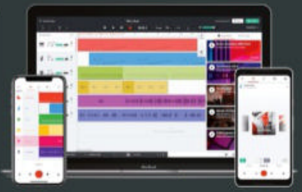
Three collaboration apps

ENDLESSS $FREE

AL | iPAD/iPHONE | 8 CORE EFFECTS, INSTRUMENTS, LOOPER

One of the latest and greatest collaborative apps, Endlesss has an intuitive interface and features drums, synths and more, designed to make tunes around an 8-channel looper. There's no limit on loops or jams created in the app and you can easily get friends to add and collaborate. It even comes with effects and a premium sub gets more features and sounds.

endlesss.fm



BANDLAB $FREE

AL | iPAD/iPHONE/AN | 200 INSTRUMENTS &FX, 10000 LOOPS

A DAW with virtual instruments, effects and loops that will run on your desktop via your browser as well as on your iPad and iPhone. The emphasis is certainly on the community with an army of collaborators – some nine million of them – waiting to hear what you'll come up with. A lot of music-making power for zero outlay.

bandlab.com

SOUNDTRAP STUDIO $FREE

AL | iPAD/iPHONE/AN | INSTRUMENTS &FX, 4000 LOOPS

Like BandLab, Soundtrap features a full DAW, loops, instruments and effects that can be run in a desktop browser as well as via the app on newer iOS devices. There's also big-name support via some of the effects including Antares Auto-Tune and you can't ignore owners Spotify who might be able to help you spread the word with whatever you come up with.

soundtrap.com

Three vocal apps

FABFILTER PRO-DS $29.99

AUV3 | iPAD/iPHONE | DE-ESSER AND HIGH FREQUENCY LIMITER

The first of a few appearances by Fabfilter apps in this feature – expensive but every bit as good as their desktop equivalents. This is the de-esser and we said in our review "you'll sssstruggle to find better than FabFilter's utterly comprehensive solution". Brilliant (the quote *and* the plugin).

fabfilter.com

MICSWAP: MIC MODELER RECORDER $FREE

AUV3/IAA/AB | iPAD/iPHONE | MOBILE RECORDING STUDIO

Not only does this app function as a recorder, it also lets you try out different microphones to change the sound of your recording. You get three models to try in the free version plus 14 others to buy as IAPs, or get the lot in the Pro version for $19.99.

future-moments.com

VOLOCO $FREE & SUB

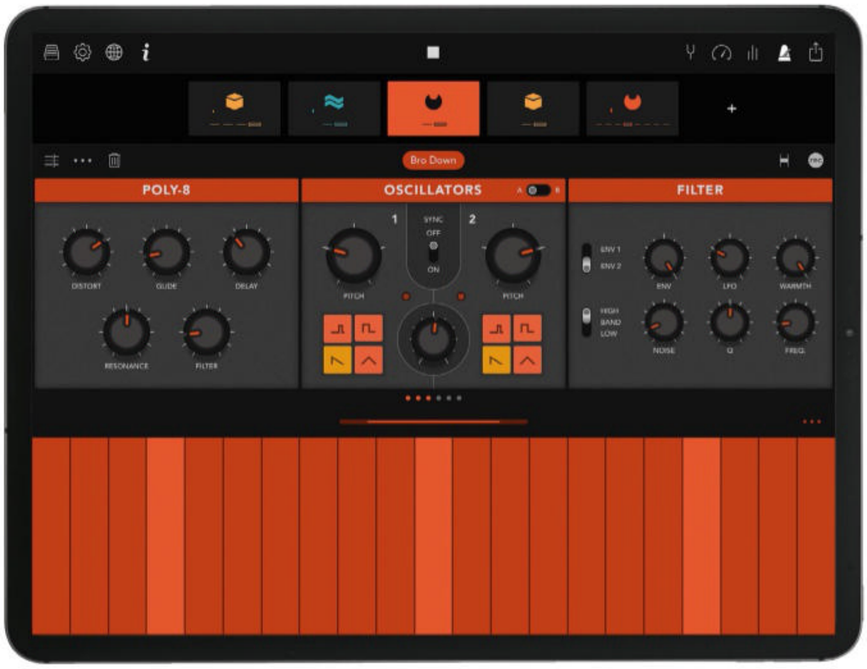
AUV3/AU | iPAD/iPHONE/AN | MULTI EFFECTS AND VOCODER

Last but not least, a multi-effects app for all formats that seems to do everything: auto tune, harmonies and even vocoding. There are dozens of presets and a bunch of effects and the only downside seems to be that it's a subscription-only service to get everything. That said, it has some great reviews.

resonantcavity.com

11 grooveboxes

Fewer features than a full-fledged DAW but far more than a drum machine, grooveboxes have taken the mobile world by storm and allow you to create tunes in an instant – a great way of creating scratchpad ideas...



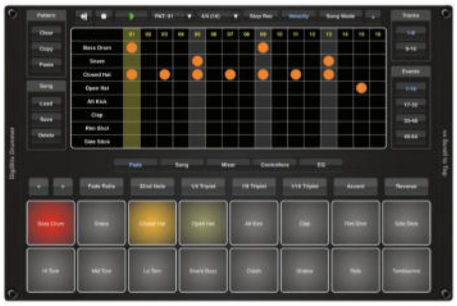
Possibly the most instant groovebox here for creating your tunes

01 AMPIFY GROOVEBOX $FREE

AL/AB/IAA | iPAD/iPHONE | 5 INSTRUMENTS 8-20 PRESETS/GROOVES PER INSTRUMENT

An inspiring tool that lets you quickly create melodies and beats. You get five free touchable instruments and while you can do a lot with these and the free patterns, they're essentially teasers for the IAPs. That said, there's enough to be getting on with without, so it's well worth a download.

ampifymusic.com



Connectivity and recordability are Digistix's friends

02 4POCKETS DIGISTIX

$7.99

AUV3/AL/IAA/AB | iPAD/iPHONE | 256 PATTERNS, MULTIPLE EXPORT OPTIONS

With added sampling options, Digistix steps up from being 'just' a drum machine to fall into our Groovebox category, and recording and editing audio is pretty simple so it's easy to import your own sounds into the DigiStix world. The step sequencer is intuitive and can easily be sync'd to your DAW and it comes with several edit options to help you create expressive patterns. With added effects, parameter automation and an 8-band EQ there's a lot here for creating beats for your DAW.

4pockets.com

03 KORG ELECTRIBE WAVE

$29.99

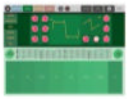
IAA/AB | iPAD/iPHONE | 8-PART SYNTH + DRUMS, 160 PATTERNS

The Electribe defined much of how grooveboxes evolved over the last 25 years, and here Korg have recreated the best bits in the company's latest drum and synth app. It's also a set up from Korg's original iElectribe with double the power (eight parts each for drums and synth), 25 groove types, 29 effects and 32-voice polyphony. You get 160 patterns to play with and up to 35 motion sequences can be stored for each of the 16 parts, making it a very flexible and dynamic box of grooves. Expensive, but this is up there with the best in terms of instant dance loops.

korg.com

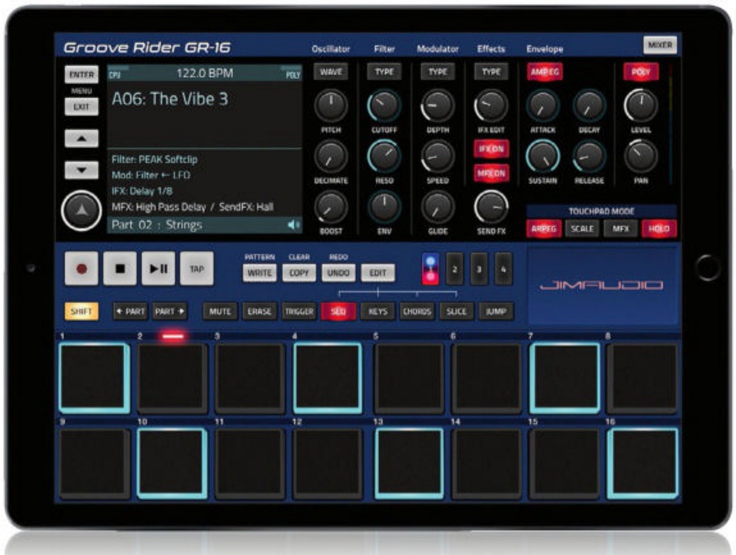
04 LUUK VAN DER GRAAFF BEATONAL $FREE

AL | iPAD/iPHONE/AN | 60 SYNTH PRESETS (PLUS USER), SEQUENCER



Beatonal is a relatively simple groovebox-type app with four channels for music making: drum machine, bass, chords and lead. You get keys (or pads) at the bottom to input each plus a good set of sound and hits. It's all very easy to put together relatively complex tunes fast, albeit in a much more polite way than with something like Pure Acid. It is free with optional IAPs.

beatonal.com


Groove Rider GR-16
Oscillator
Filter
Modulator
Effects
Envelope
MIXER
ENTER
MENU
EXIT
122.0 BPM
A06: The Vibe 3
Filter: PEAK Softclip
Mod: Filter ← LFO
IFX: Delay 1/8
MFX: High Pass Delay / SendFX: Hall
Part 02 : Strings
WAVE
TYPE
PITCH
CUTOFF
DEPTH
IFX EDIT
ATTACK
DECAY
LEVEL
DECIMATE
RESO
SPEED
SUSTAIN
RELEASE
PAN
BOOST
ENV
GLIDE
SEND FX
TOUCHPAD MODE
ARPEG
SCALE
MFX
HOLD
TAP
PATTERN
WRITE
CLEAR
COPY
REDO
UNDO
EDIT
JIMAUDIO
SHIFT
PART
MUTE
ERASE
TRIGGER
SEQ
KEYS
CHORDS
SLICE
JUMP

Big rating, big sounds and big tunes with Grooverider

06

GROOVERIDER GR-16 $18.99

AL/AB/IAA | iPAD/iPHONE | UP TO 256 PATTERNS, 32-VOICE POLYPHONY

This is one of the best grooveboxes out there in terms of sheer synth power. You get two oscillators, five waveforms, the ability to import wavetables, loads of drum sounds, masses of effects and an arpeggiator; no wonder it's one of the highest-rated music production apps. Great for big dance music.

jimaudio.pro

05

NOVATION/AMPIFY LAUNCHPAD $FREE

ALAB | iPAD/iPHONE | 400 SOUNDS, LIVE SEQUENCING

It might have been around the block a few times – originally developed by Novation before that became Ampify for apps – but Launchpad still commands a very respectable 4.8 score on the App Store, probably because it simply does what it sets out to do so well. Think Ableton Live in terms of loop launching, with beats, bass, melody and sampled loops being launched from left to right to make complete performances. You get 400 loops to start with and can import your own audio to mix or remix things up on your own level. And of course you can tap into the Ampify IAPs if you like too

ampifymusic.com

07

PURE ACID $14.99

AUV3/IAA/AB | iPAD/iPHONE | 80 PRESETS , PATTERN SEQUENCER

Here he is again. Is Dmitrij Pavlov the best developer of music production apps out there? His second groovebox on these two pages is a wonderful app for older skool dance heads doing, as it does, acid grooves with pomp and bluster. It's reminiscent of Propellerheads' ReBirth in that you can get the sounds of classic Roland boxes (TB-303 and TR-808/707/909) grooving along but it's very much updated to offer more features. There are 16 drum parts (with 35 sounds), Saw and Pulse bass waveforms, a dozen effects and a great pattern-generating section.

Damn it Jim, you did it again.

jimaudio.pro

08

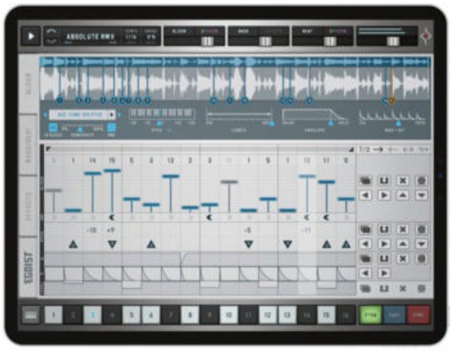
REASON COMPACT $FREE

AL/IAA/AB | iPAD/iPHONE | THREE INSTRUMENTS, 16 KITS

It's one of the simplest grooveboxes in this round up but consequently one of the best to get ideas, beats and melodies down quickly. You get three instruments, the Ritmik drum machine, Europa and Monotone synths and you simply select your sounds or kit, record live or step by step, and use a touch grid editor to create or change your recordings.

Mix, add effects, export audio or to Reason and you're good to expand on those ideas elsewhere. A great starting point for ideas and as easy as it gets, although IAPs can get expensive (between $0.99 and $9.99)

reasonstudios.com


ABSOLUTE RMX
EGOIST

09

SUGARBYTES EGOIST $29.99

AUV3/AL | iPAD/iPHONE | 80 PRESETS , PATTERN SEQUENCER

Egoist essentially takes any sound you want and lets you slice it up and mix beats and a bassline with it. You get 1000 beats to do that, 16 pattern templates, and up to 16 different samples can be used at the same time. The three engines – sample, beats and bass – then merge to go through an effects section with seven effect options. There's lots of real-time control, random options and while Egoist might be the most expensive app in this round up, it does things a little differently and with your audio at its core, it's totally up to you where you take it.

sugar-bytes.de

10

TRIQTRAQ $6.99

AL/IAA/AB | iPAD/iPHONE | 400 SOUNDS, PATTERN SEQUENCER

Record, tweak and automate your loops with this app. You get 400 one-shot samples (in Drums, Bass, Percussion and Keys categories) and you can import your own to join the sonic party. There are four channels to play with and eight pads to input data. There are lots of export options and a free LE version lets you try the concept out with less sounds.

triqtraq.com

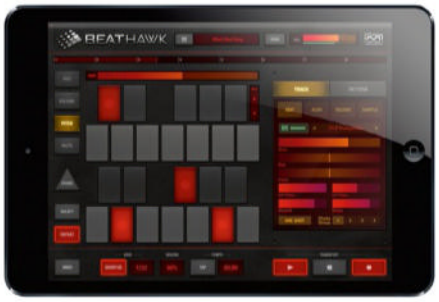
11

UVI BEATHAWK $9.99

AUV3/AL/IAA/AB | iPAD/iPHONE | DOZENS OF LOOPS, 16 TRACKS, MULTIPLE EXPORT OPTIONS

With the dev muscle of software heavyweights UVI behind it, Beathawk delivers almost full DAW power with the ease of a groovebox. You get MPC-style pads, 16 tracks to record into, and 1GB of sounds with which to do it. You get plenty to start on, and can add your own with a piano-style keyboard. It can feel a little too much about the add-ons, but you can get your ideas down very quickly on it and in that sense, it's one of the best scratch-pad DAW/grooveboxes around.

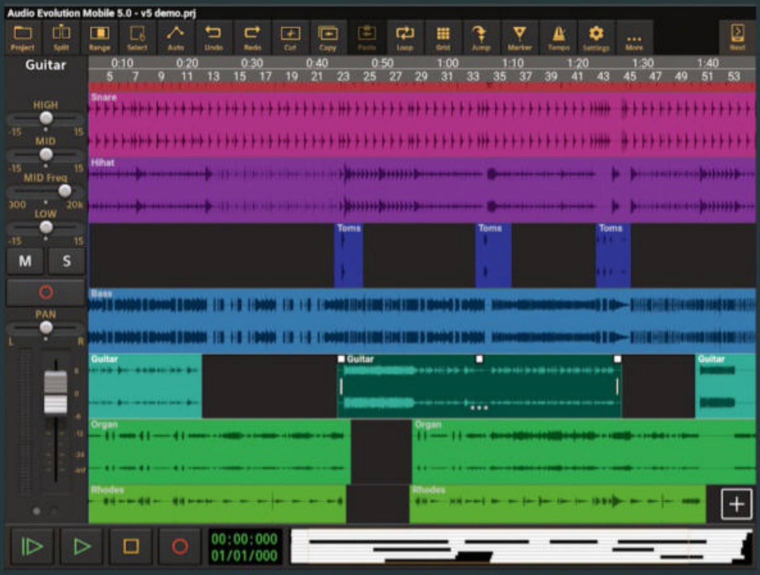
uvi.net



Beathawk lets you get your ideas down fast

12 of the best Android apps

We have only had a few of them so far, so let's round up some of the other apps you can download for Android. (These are on top of FL Studio, Cubasis, Caustic et al, included in our other categories)

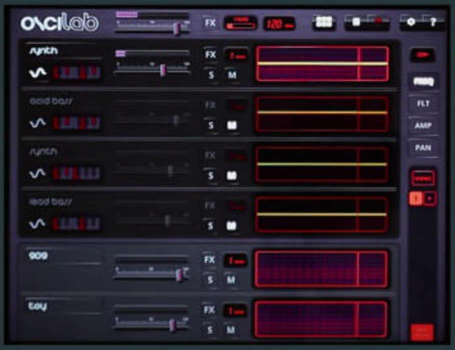

Audio Evolution Mobile 5.0 - v5 demo.prj
Project
Split
Range
Select
Auto
Undo
Redo
Cut
Copy
Paste
Loop
Grid
Jump
Marker
Tempo
Settings
More
Next
Guitar
HIGH
MID
MID Freq
LOW
M
S
PAN
Snare
Hihat
Toms
Bass
Guitar
Organ
Rhodes
00:00:000
01/01/000

01 AUDIO EVOLUTION MOBILE STUDIO $9.99

DAW | AN/ iOS | AUDIO & MIDI TRACKS, EVOLUTION ONE SYNTHESISER PLUS SOUNDFONT INSTRUMENTS

This full DAW offers flexible MIDI and audio track recording plus a range of built-in instruments, including Evolution One which is based on the rather great Synth One from AudioKit (see the Synth roundup). It features decent import and export functions, a good range of effects plus automation. There are more effects, sounds and presets by way of IAPs.

extreamsd.com


oscilab
synth
acid bass
synth
lead bass
909
toy
FX
S
M
FLT
AMP
PAN

Oscilab makes grooves from waveforms and more

02 2 BEAT OSCILAB PRO $9.99

GROOVEBOX | AN/iOS | STEP SEQUENCER PLUS OSCILLATOR GENERATOR

A stand-out feature here is that you are generating much of the melodic parts of your grooves from flexible core oscillators and then adding beats with an easy step sequencer. It's very simple to create very electronic-sounding grooves that are a little different from your average groovebox and the UI makes it a somewhat addictive process. It's now one of the older music Android apps out there but still looks (and sounds) fresh.

play.google.com

03 GRAINSTORM $FREE

GRANULAR SYNTH | AN | EFFECTS, AUDIO RECORD

More intriguing sound design app than hands-down useful audio tool, Grainstorm features a convolution 'verb, time-stretching and a phase vocoder. You load in audio to apply the granular-type synthesis and while the interface might not win any awards, Grainstorm does do something few other apps will… for free.

play.google.com

04 G-STOMPER STUDIO $12.99

DAW/PERFORMER/ GROOVEBOX | AN | STEP SEQUENCERS, INSTRUMENTS, FX

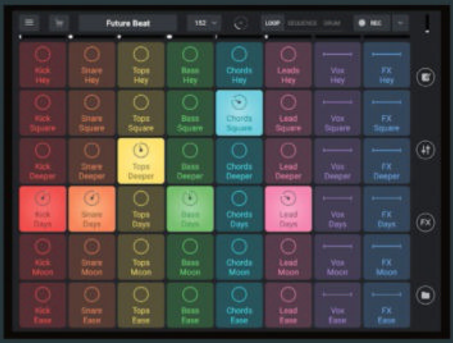
Stretches the definition of both groovebox and DAW, resulting in a great experience for live performance as well as producing tunes. It certainly looks the business with enough screen options for every task (step sequencers for melodies and beats, a sampler, VA Beats synth, piano keyboard, 24 pads, effects rack, and more) and there's a line mixer that handles up to 36 channels. Enough to keep any producer and performer busy and a great Android option.

planet-h.com

05 MIKROSONIC RD4 GROOVEBOX $4.49

GROOVEBOX | AN/iOS | 4 CHANNELS, 8-PART DRUMS, BASSLINE

Nice and easy groovebox with four channels on which you can place a Baseline synth (similar to a Roland TB-303), a virtual analogue synth (with three oscillators and six different waveforms) or drum



Mixvibes remixes live – say that fast 10 times

machine (with 10 kits based around classic machines like Roland TR-808s and 909s). With such a combination of instruments, you can realise everything from classic acid to more contemporary EDM. There are even five real-time effects (reverb, delay, phaser, filter and distortion) which are handy as performance effects. It's easy to use and a great way to make quick tunes.

mikrosonic.com

06 MIXVIBES REMIX LIVE

$FREE

LOOPER AND SEQUENCER | AN/iOS | FINGER DRUM, SEQUENCE AND MIX

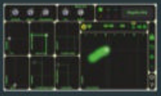
With the addition of a step sequencer this app has been lifted from what could have been a mere loop arranger into a more creative tool. There are definite Ableton Live vibes with cells being launched in sync – and an Ableton Link option – and plenty of additional sound packs to enjoy (for a price, natch). The audio import and share features give it a lot of flexibility as do real-time effects. There's more depth and flexibility here than you might expect.

mixvibes.com

07 QIBRD: FREE VIRTUAL ANALOG SYNTHESISER

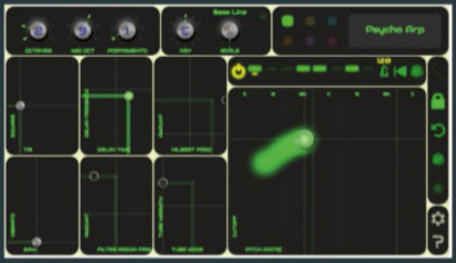
$FREE

VA SYNTH | AN | 63 KITS, EXPORT TO ABLETON LIVE OR AUDIO

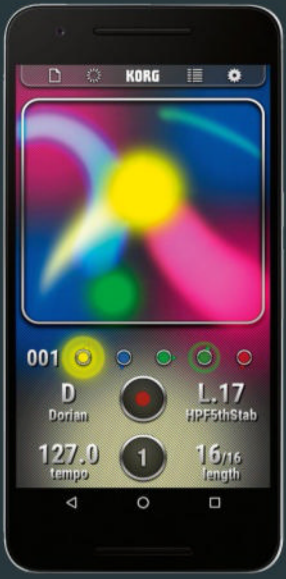


One of the best (and indeed most highly-rated) synths out there mostly because it's completely free – and there are no ads – but also because of its lovely touch UI that will have you tweaking its sound in real time. Don't be fooled too much by the 'analogue' name as the resulting sounds (and look) are a little more varied, ranging from arpeggiated to metallic, dreamy to deep. A lovely Android-only and totally free experience.

play.google.com



A lovely UI and zero price tag has won QiBird fans



You can have a lot of real time fun with the Korg Kaossilator app

08 KORG KAOSSILATOR

$19.99

DYNAMIC PHRASE SYNTH | AN/ iOS | 150 SOUNDS, 35 SCALES, 5-PART SEQUENCER

Korg's classic comes to Android and it's a cracker. Stroke or tap your screen horizontally to change pitch, or vertically to change other parameters. You get 150 varied preset sounds to manipulate and can keep everything in tune with scale options. A five-track sequencer lets you record or perform and there are good options to import audio and export the results.

korg.com

09 ROCKRELAY FM SYNTH

$5.99

SYNTH | AN/iOS | 1512 PRESETS, 6-OPERATOR FM SYNTHESIS

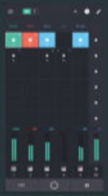
An emulation of Yamaha's mighty DX7 synth with some of the simplicity an app can bring. It certainly sounds the part and you can easily play it with a MIDI keyboard or controller supported via USB. It's a lovely emulation and free (with a one off payment of $8 to remove the ads). Rock Relay also do a 303 and a VA synth which don't score quite as well reviews-wise but are still very capable apps.

rockrelay.com

10 SEQUENCE GROOVEBOX

$FREE

GROOVEBOX | AN | INC. VA SYNTH, 16 PADS, 300 DRUMS



An app that takes some of the best bits of others here – and desktop apps – to try and push the very boundaries of the genre into full DAW territory. You get a Launcher area for clips and scenes a la Live, pad and keyboard note inputs, plus edit pages for beats and piano roll notes; so you see, there's something for everyone. It's a bit of a jack of all these trades but is being tweaked as we speak to allow arpeggiation, better file export and more. Certainly a lot of fun and one to watch bloom and fly.

seqvence.co

11 SAUCILLATOR $FREE

SYNTH | AN | CHANGE OSCILLATORS AND FX, LIVE-LOOPING AND RECORDING

Like Grainstorm, this is something a little different with the user controlling two touch oscillators to produce sound by dragging along the X and Y-axis. It might be limited but does give you some functionality of the Kaossilator (above) for free.

play.google.com

12 SUNVOX $5.99

MODULAR SYNTH | AN/iOS | INCLUDES SYNTH MODULES AND EFFECTS

An intuitive modular synth that features plenty of draggable synths and effects (including Analog Generator, DrumSynth with 120 synthetic sounds, FM synthesiser and more) and a tracker-style pattern-based sequencer to create tunes. As the reviews state, it's well worth immersing yourself into the environment in order to feel comfortable navigating what can be a slightly alien interface, but you'll discover a sonically diverse app which is great for sound design and a bit of hands-on tweaking fun.

warmplace.ru

Four of the best instrument apps

IK Multimedia Hammond B-3X
$129.99
iPHONE/iPAD | AUv3
The most expensive app in our roundup (by some way) yet it has still managed to garner a 4.6 rating on the app store, all down to the sound quality, workflow and authenticity.
ikmultimedia.com

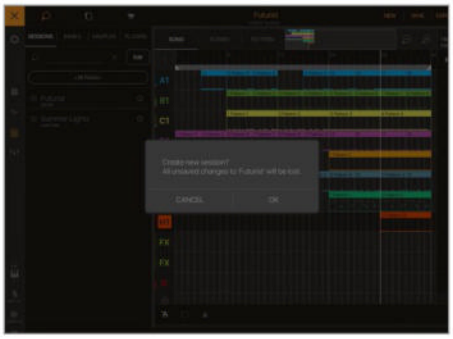
OMGuitar $8.99
iPAD | AB
There are many guitar amps sims but surprisingly few guitar emulation apps, this being one of the better ones. You get three acoustic guitars, three electric, plus 10 fx.
amidioinc.com

ThumbJam $8.99
iPHONE/iPAD | IAA/AB
With 40 multisampled instruments, this could be seen as a sound module (like Module below) but, actually, you can play each one with a multitude of different scales as well. And Jordan Rudess says it's good, so it must be, right?
thumbjam.com

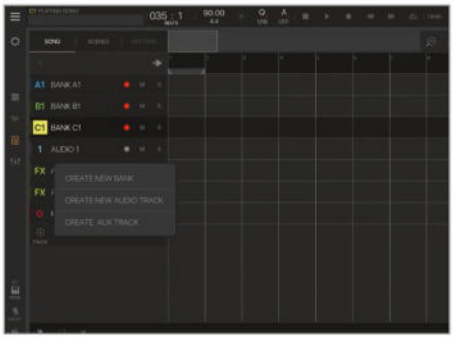
Korg Module £39.99
iPHONE/iPHONE | IAA/AB
Module focuses on keyboard instruments so, yes, you get pianos, but also an organ and clavinet. But it's really about the expansions ($9.99 to $29.99) which include orchestral, synth and other packs. You'll pay a lot for them but remember this is the tech and sound quality that went into a range of Korg workstations so it's of the highest level.
korg.com

> Step by step

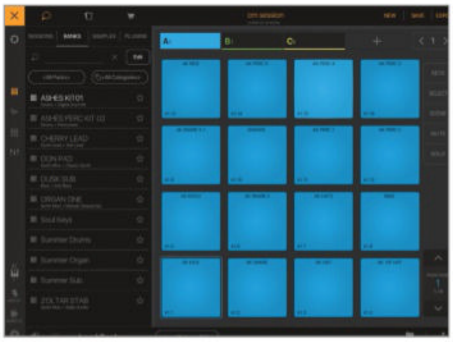
3. Creating a track in Beat Maker 3



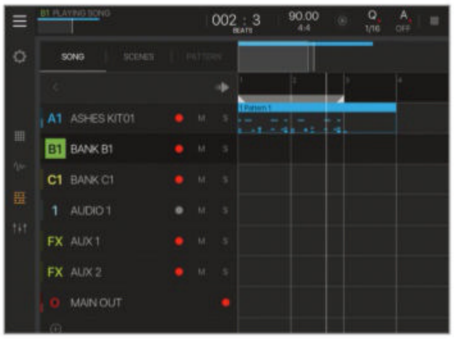
1 > If you've never used a mobile DAW before, this tutorial will show you how close an experience it can be to using your desktop DAW. We've chosen Beat Maker 3 as our mobile DAW and loaded in an example song. You can see it flow left to right as on a 'normal' DAW but we're going to create a new song 'CM Session'.



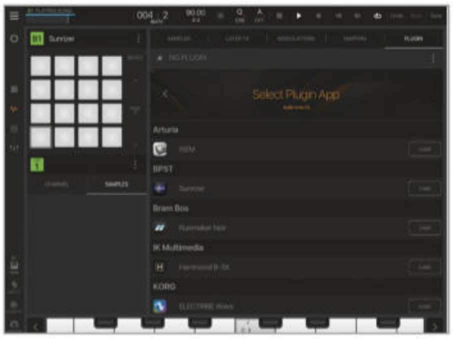
2 > Now we can add some tracks to the Session, going from top to bottom. We can add Bank (drums, plugin), Audio (sample) or Aux (effects) tracks. We'll add a few of each.



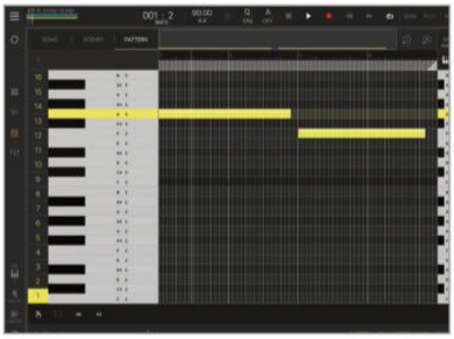
3 > To our first Bank track we want to add some beats, so we click on the pad icon (top left) and then load a kit onto the pads (in this case, the first one, Ashes Kit 01). Now we record some beats by pressing the Record button in the Transport bar.



4 > Once we're done, hit the Session icon (third one down on the left) and this will show your song and the drums you just recorded as the top track. They have auto-looped around the first two bars.



5 > Now select a new track, the Sample option (second icon down) and the Plugin tab running along the top right. You get a choice of loading Audiobus, Inter App Audio or Audio Units plugins. We've gone for the latter and it shows which AU instruments we have available (just like a desktop DAW!).



6 > Select a plugin (we've gone for the Arturia iSEM), and play it via the Piano tab at the left. This will open the iSEM directly within the DAW so you can play it on the track. Record some notes (just a couple here for demo purposes) and, double click to open a piano roll editor. Like we say, familiar stuff!

Nine great effects

AUDIOMODERN FILTERSTEP $FREE

NOT STATED | iPAD/iPHONE | 3 FILTER TYPES, VARIABLE LOOPER

There are some great free effect plugins out there and this one from Audiomodern takes some beating sound-wise. Simply select your filter type – low, high or bandpass – and edit your steps (randomise if you like) for great filtered patterns on any sound. Lock steps, load presets, change the range for free! Brilliant.

audiomodern.com

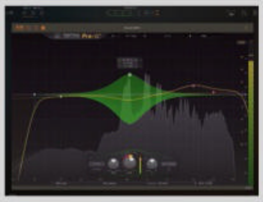
SHIMMERVERB
Eventide
H9

EVENTIDE SHIMMERVERB $14.99

IAA/AUV3 | iPAD/iPHONE | PITCH SHIFTING REVERB, PERFORMANCE CONTROL

If you want atmospheric reverb sounds this could be the app for you. It 'combines a massively lustrous reverb with parallel pitch shifters' and has a hands-on ribbon controller to morph between settings. With fx experts Eventide behind it, you are assured a great sound and it's fab for guitars, keys and vox.

eventideaudio.com



FABFILTER PRO-Q3 $29.99

AUV3 | iPAD/iPHONE | UP TO 24 EQ BANDS, A BIG RANGE OF FILTERS

If there's one EQ that has popped up most in our producer interviews, it is Fabfilter's brilliant EQ and now it – along with most of the company's effects – can be bought in AUv3 format... for a price. Yes, it is expensive for iOS but to have this running in a DAW like Cubasis adds a real pro sheen to everything.

fabfilter.com

GLIDERVERB $FREE TO $3.99

IAA/AB | iPAD/iPHONE | BUILT-IN SAMPLER, EVOLVING REVERB

Described as a 'Reverberator with Glissandos' this delivers the sound of a room gradually changing shape by utilising a continually modulated reverb algorithm. It therefore specialises in off-the-wall- dynamic and evolving reverbs and is one you'll probably drift in and out of – and lose hours while you're at it.

apps.amazingnoises.com

INFECTED MUSHROOM WIDER $FREE

NOT STATED | iPAD/iPHONE | STEREO WIDTH ENHANCER

We all need a bit of width in our mixes and this freebie from Infected Mushroom/Polyverse uses comb-pass and all-pass filters to do just that, with any signal. It will also handle mono signals without any phasing issues. You simply stream your audio through the plugin and it will take it wider to an 'awe inspiring degree'.

polyversemusic.com

KLEVGRAND SPINN $14.99

AUV3 | iPAD/iPHONE | MULTIBAND MODULATING EFFECT

If you don't want to spend full-price for that IK Hammond (opposite) but still require some of the infamous Leslie-type speaker sound, then this could bring it to an iOS device near you. While it doesn't aim directly to emulate that sounds, its bands of rotating modulation inevitably go there and lots of controls take the sound much further should you wish.

klevgrand.se

TAPE CASSETTE 2 $FREE

AUV3 | iPAD/iPHONE | WARMTH, NOISE AND SOUND OF CASSETTES

Getting the sound of tape is, of course, something that has been needed since digital recording got too clinical, and now your iOS device will serve it up in this, and for free. TC2 includes a dynamic saturation curve algorithm, tape noise, wow and flutter and can be used on the whole mix or single tracks.

caelumaudio.com

TONEBOOSTERS TB COMPRESSOR $6.99

AUV3/IAA | iPAD/iPHONE | MULTI-PURPOSE COMPRESSOR

A multi-purpose compressor for mastering and dynamics processing. TB can be used in all sorts of tasks: soft knee, parallel, side-chain and band-limited compression. It also includes a handy option to hear everything changed by the compressor in isolation.

toneboosters.com

TTAP : DELAY GONE DEEP $FREE & SUB

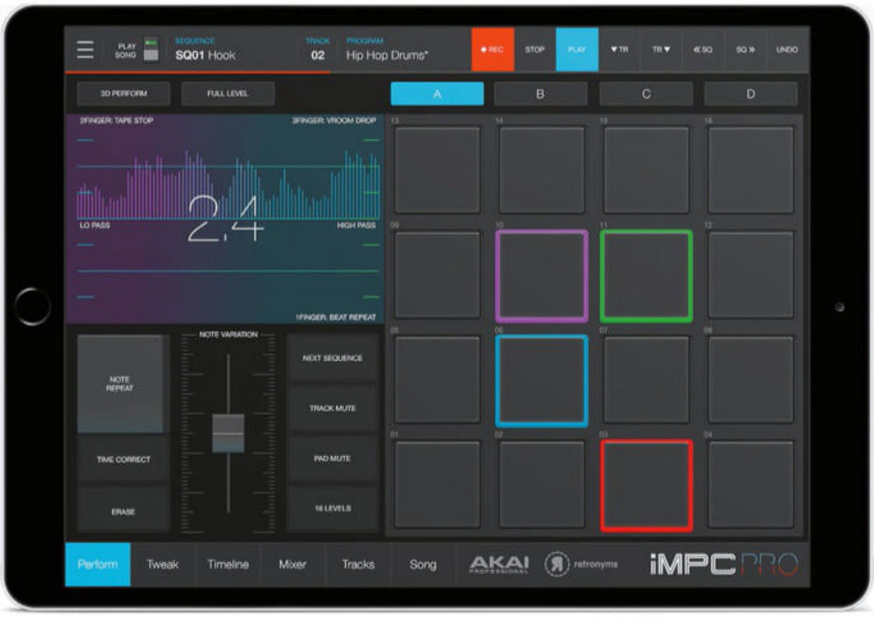
AUV3 | iPAD/iPHONE | ANALOGUE TAPE DELAY

We've pretty much covered every type of effect here bar a great delay, so here's one that goes deep. It uses two buffers with lots of shaping controls to create everything from warm and more classic delays to glitched-up, out-there results. Another top scoring effect app (albeit a very new one).

k-devices.com

12 of the best full DAW apps

The central component in your mobile studio, the app that does everything and is the powerhouse behind your music making. The full-on DAW for your mobile device has certainly come of age...


PLAY SONG
SEQUENCE
SQ01 Hook
TRACK
02
PROGRAM
Hip Hop Drums*
REC
STOP
PLAY
TR
TR
SQ
SQ
UNDO
3D PERFORM
FULL LEVEL
A
B
C
D
3FINGER: TAPE STOP
3FINGER: VROOM DROP
2.4
LO PASS
HIGH PASS
1FINGER: BEAT REPEAT
NOTE VARIATION
NOTE REPEAT
TIME CORRECT
ERASE
NEXT SEQUENCE
TRACK MUTE
PAD MUTE
16 LEVELS
Perform
Tweak
Timeline
Mixer
Tracks
Song
AKAI PROFESSIONAL
retronyms
iMPC PRO

Get classic MPC beats and modern sequencing and editing options with iMPC Pro 2

01 AKAI IMPC PRO 2 $24.99

AL/AUV3/IAA | iPAD/iPHONE | 64 TRACK MIXER WITH EQ AND 4 FX, WARP TRACKS + OTHER REAL-TIME FX

It almost slipped into our Drum Machine category but iMPC Pro's ability to load AUs, its mixing and audio editing functionality and great effects make it a full DAW in our eyes. And one of the highest-rated ones too, mixing classic MPC beat-making with in-depth sequencing and mixer features.

akaipro.com

02 APPLE GARAGEBAND $FREE

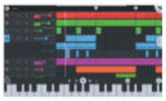
AUV3/IAA | iPAD/iPHONE | 7 INST TYPES, 32 TRACKS, LOADS OF SOUNDS, LIVE LOOPS

Almost as attractive a proposition for iPad music making as Logic is for Mac production in terms of its power, the sounds and instruments you can use. It's not however *whisper* as intuitive as it should be – drawing notes in requires practice, even looping is a little clunky – and we had some timing issues. But for the girth of the package plus the hands-on performance effects, it's hard to complain about when it's free.

apps.apple.com

03 IMAGE-LINE FL STUDIO MOBILE $13.99

IAA/AB | iPAD/iPHONE/AN/WIN | SIX INSTRUMENTS, 15 EFFECTS, STEP AND PIANO ROLL ENTRY



One of the few mobile DAWs available that works on just about any tablet you can think of, FL Studio demos years of Image-Line expertise. It has a slick feel and a completely intuitive workflow, simply managing editing, arranging and programming in a way that you expect from a touch device. There's step sequencing, piano roll editing, effects, MIDI and audio tracks – all the comforting things you'd expect coming from a desktop DAW and within touching distance. Overall, this is a cross-platform DAW dream.

image-line.com

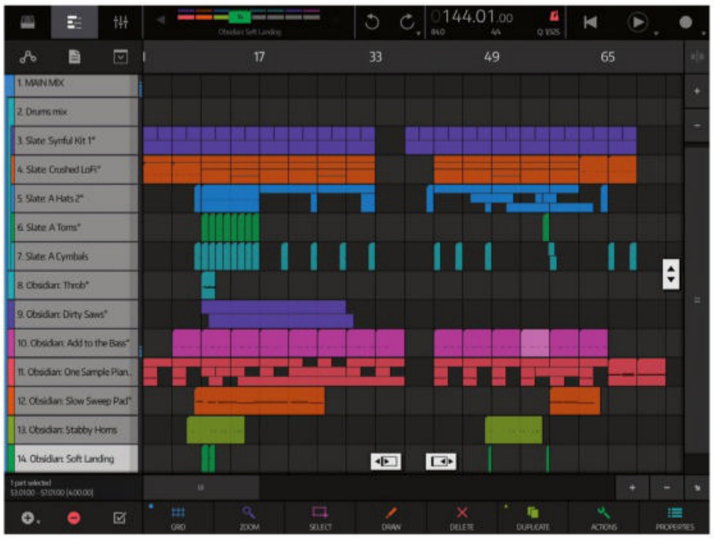
04 INTUA BEATMAKER 3 $FREE

AUV3/AL/IAA | iPAD/iPHONE/AN | UNLIMITED INSTRUMENT, AUDIO AND FX TRACKS, 32-NOTE POLYPHONY, 14 EFFECTS

It should be in our groovebox category, right? Wrong. Look deeper and there's an in-depth sequencer with automation, a fully-functioning mixer, audio and instrument tracks and, overall, the ability to produce songs with top-line DAW detail. The emphasis is on sampling and (great) audio editing rather than synth instruments, but these can be used via AUv3. Pads and keys handle your input and there's a growing library of sounds, plus the live and performance effects give it a nice leftfield feel. Certainly a lot more here than initially meets the eye (and ear).

intua.net

Korg Gadget – more than a groovebox



Nano Studio is up there with the best

05 NANO STUDIO 2 $19.99

AUV3/AL/IAA/ABA | iPAD/iPHONE | COMES WITH OBSIDIAN SYNTH AND SLATE DRUM MACHINE, UNLIMITED TRACKS

One of the oldest titles here but unlike some, Nano Studio has been updated to keep up with the times. It has AUv3 and Ableton Link support so will run your other apps and run *with* them too. Its own instruments are highly flexible and the DAW side is strong with decent arrangement, MIDI, automation and sample editing. Add in 11 good effects and comprehensive export functions and you have a DAW that has kept ahead of many and costs less.

blipinteractive.co.uk

06 KORG GADGET $39.99

AL/AB/IAA | iPAD/iPHONE | 18 GADGETS, UNLIMITED TRACKS, 14 INSERT FX

Some would argue that Gadget is more groovebox than DAW but we would – with the greatest respect – entirely disagree. With 18 Gadgets (synths, drum machines, samplers) to start with (plus loads more to buy) you get a complete DAW ecosystem, brilliant touch editing, fast (and complete) song creation across unlimited tracks, connectivity to your other instruments plus brilliant effects, mixing and great export. We've made more tunes on Gadget than any other mobile DAW – it's that intuitive – and if we don't mind saying, they (all) sound brilliant to boot

korg.com

07 MEDLY MUSIC STUDIO $FREE

AL/IAA/AB | iPAD/iPHONE/AN | LOOP-BASED DAW, UP TO 24 INSTRUMENT TRACKS,

One app that attempts to deliver a master-of-all-trades approach with a fast way of putting together tunes, some pro DAW features and 16 free instruments and 100 loops to start with. You can become a Medley member for a subscription and there are cheap (and more expensive) IAPs. Not as fully featured as some of the DAWs here but then neither is it in any way complex, so great if you're starting out.

medlylabs.com

08 N-TRACK STUDIO 9 $FREE TO 4.99/MONTH

AUV3/AL/IAA/AB | iPAD/iPHONE/AN | 8 TRACKS + 2 EFFECTS/CHANNEL (MINIMUM), STEP AND PIANO ROLL EDITING, LOTS OF OPTIONS

Exists as a free app but with no local saving so you'll have to subscribe; shame, as this gets in the way of what is a decent DAW. The focus should really be on its clear Logic-like interface, AUv3 compatibility and decent editing. Instead it's all about complicated subscription levels ranging from Standard ($0.99) to Suite ($4.99), though there is a one-off purchase option for a not inconsiderable $29.99.

ntrack.com

09 ROLAND ZENBEATS $FREE

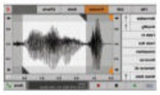
COMPATIBILITY N/S | iPAD/iPHONE/AN | UNLIMITED TRACKS, 4 INSTRUMENTS, 7+ EFFECTS

The all-new Zenbeats appears to be linking just about every Roland concept up in one app. It's available for a multitude of formats and can liaise with Roland hardware and the company's Cloud software. Behind the bluster is a great-looking mobile DAW, where you can easily assemble samples, beats and presets and then transfer the results between tablet and desktop. The free version gets you limited stats (see above) while 'Ultimate Unlock' (some $150) gets you everything. As it should.

roland.com

10 SINGLE CELL CAUSTIC 3 $9.99

N/S | iPAD/iPHONE/AN | 14 INSTRUMENTS, 20 EFFECTS, MIXER, SEQUENCER



An oldie but still commanding good scores on the App Store. Caustic is a cross between Gadget and Reason (in some ways) and includes devices like an FM synth, bassline, drum machine and so on, with which to assemble complete tunes. It's probably due an upgrade – any kind of interactive compatibility seems lacking – although it is certainly a cheap way of exploring lots of instruments.

singlecellsoftware.com

11 STEINBERG CUBASIS $49.99

AUV3/IAA/AB | iPAD/iPHONE/AN | UNLIMITED AUDIO/MIDI TRACKS, 3 INST, 21 EFFECTS

One of the ultimate desktop DAWs has made a fantastic transition to mobile, now available for Android as well as iOS. The touch experience is amazing, you can run AUv3 plugins just like a proper DAW and the whole thing points to a great future of mobile music production. The smaller phone experience can feel cramped on occasion but everything pinches, swipes and zooms as you'd expect, so overall it's a totally intuitive and immersive production environment. Expensive, but so many DAWs are. Lots of pretty cool and good value (but not essential) IAPs too.

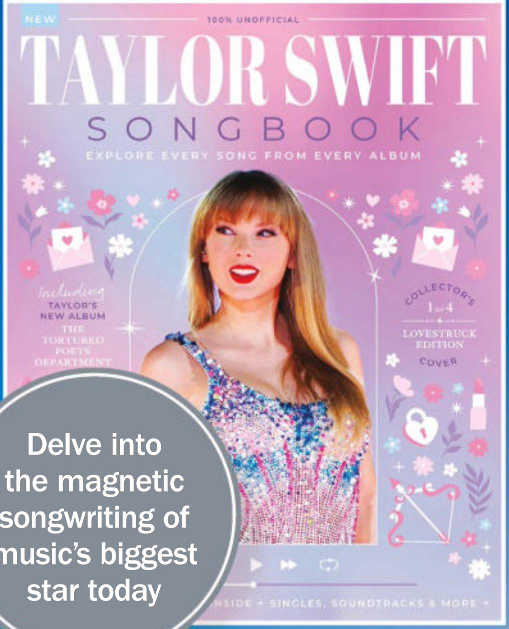
steinberg.net

12 WAVEMACHINELABS AURIA $24.99-$49.99

AUV3/AL/IAA/AB | iPAD/iPHONE | BUILT-IN SAMPLER PLAYER AND ANALOG SYNTHS, REAL-TIME AUDIO WARPING

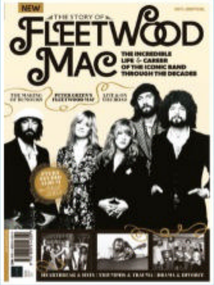
The darling of mobile music production, the Pro version of Auria is garnering some unfavourable reviews due to bugs, but the lighter version isn't. Whatever, this is still one of the most pro DAW experiences you'll get with a tablet; much like the Pro Tools of the mobile world that includes great plugins and 24 tracks of recording.

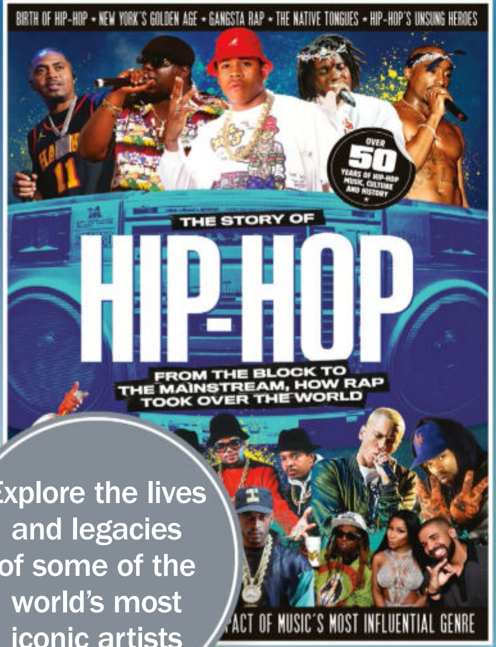
auriaapp.com


TAYLOR SWIFT
SONGBOOK

Delve into the magnetic songwriting of music's biggest star today

THE STORY OF ABBA


FLEETWOOD MAC


THE STORY OF
HIP-HOP

Explore the lives and legacies of some of the world's most iconic artists

ONE DIRECTION
FANBOOK

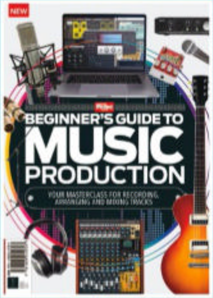
GUNS N' ROSES

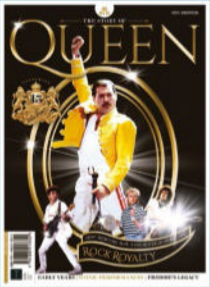
ULTIMATE 90s POP COLLECTION

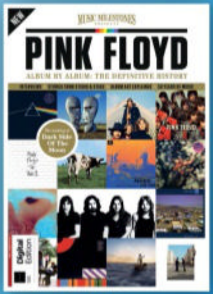
NU METAL
COLLECTION

Crank up the volume and get to know the best nu metal bands on the planet

THE STORY OF K-POP


BEGINNER'S GUIDE TO MUSIC PRODUCTION





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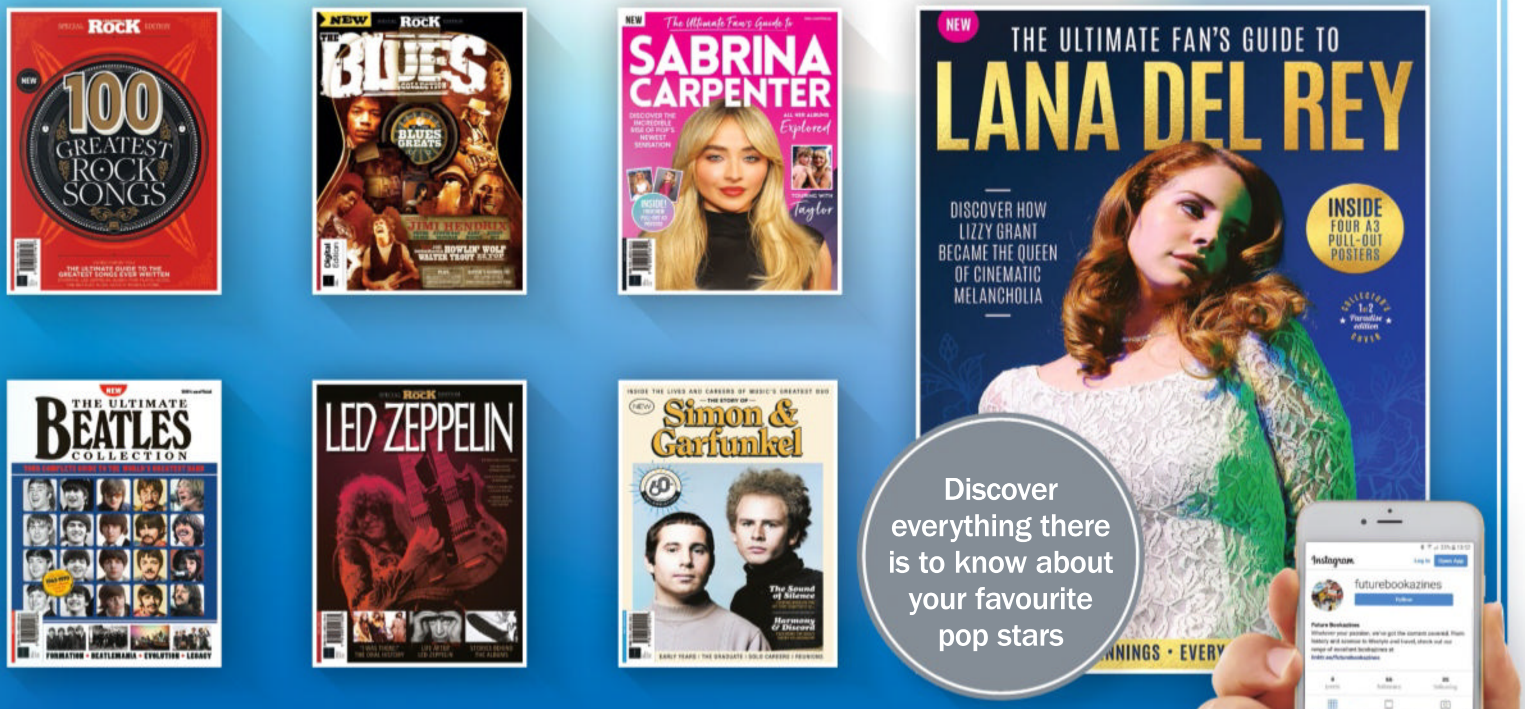

100 GREATEST ROCK SONGS
THE BLUES
SABRINA CARPENTER
THE ULTIMATE FAN'S GUIDE TO LANA DEL REY
THE ULTIMATE BEATLES COLLECTION
LED ZEPPELIN
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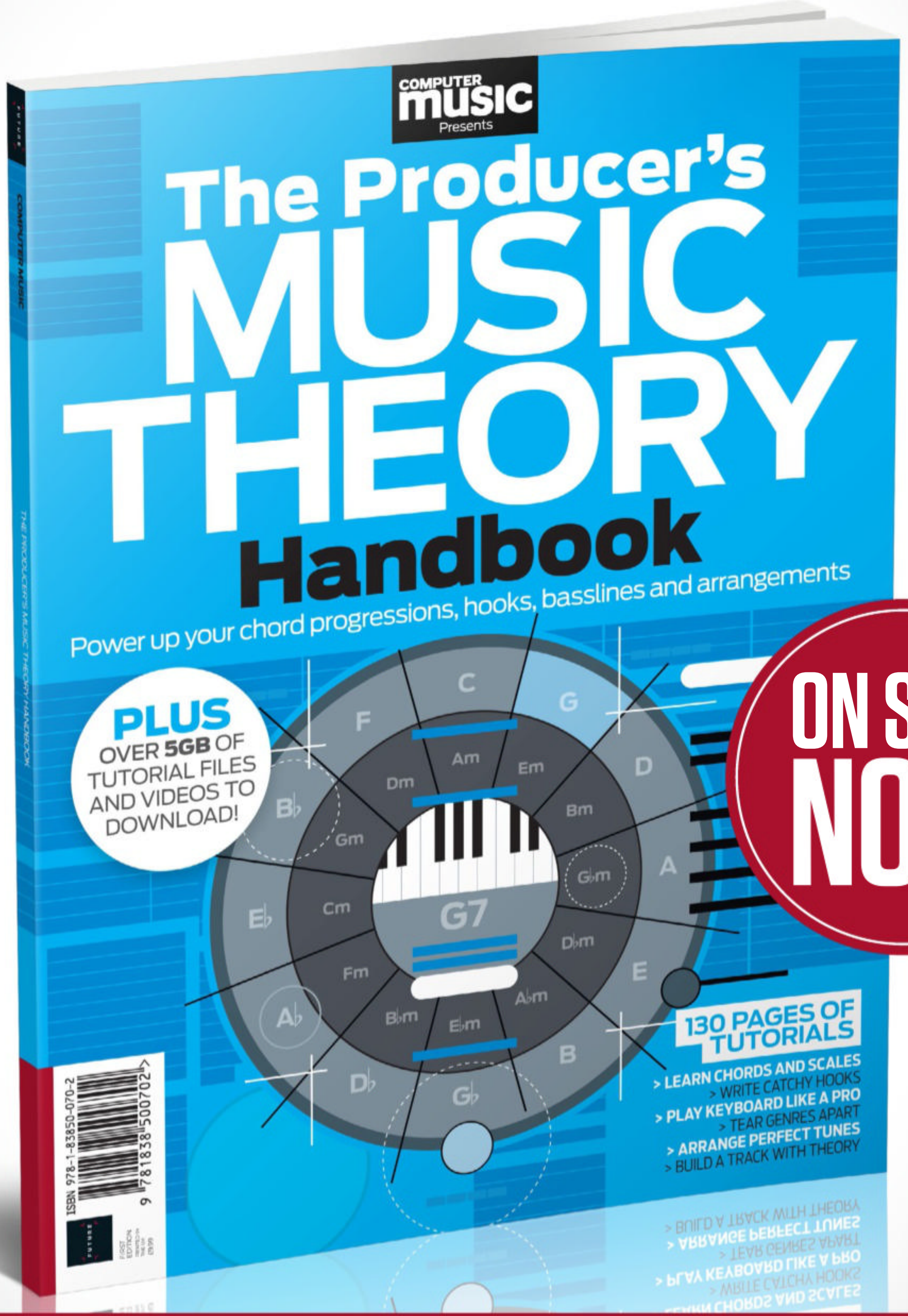
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GETTING STARTED

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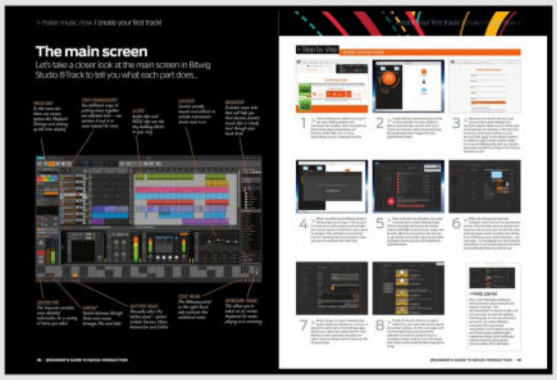

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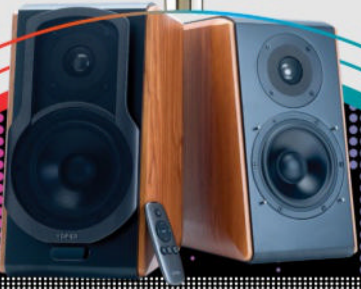

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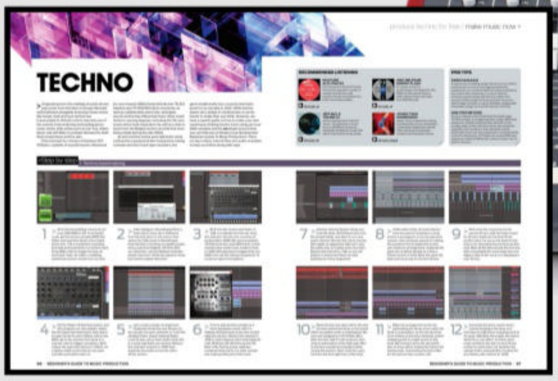

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